

**Vision 2047 :**  
**Transforming India's Future**



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## **Transforming India's Future**

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# **Vision 2047 : Transforming India's Future**

**Editor-in-Chief : *Dr. Subhash Sihag***

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# Preface

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The vision of “Viksit Bharat 2047” is more than a developmental target; it is a profound aspiration to transform India into a global leader that is economically prosperous, technologically sovereign, and culturally rooted. Achieving this goal requires navigating a complex landscape of traditional security burdens while embracing the emerging opportunities of a multi-domain global order.

This book brings together a diverse range of academic perspectives that explore the multi-dimensional pathways toward 2047. It is grounded in the philosophy that a developed India must harmonize its ancient civilizational values—such as *Dharma*, *Ahimsa*, and the Indian Knowledge Systems (IKS)—with 21st-century innovation. The volume is structured to address the core pillars of national transformation:

- **Civilizational and Indigenous Wisdom:** Examining how traditional practices in agriculture, such as Zero Budget Natural Farming (ZBNF), and holistic healthcare systems like Ayurveda can offer sustainable, self-reliant solutions for the future.

- **Educational Revolution:** Analyzing the implementation of NEP 2020 and its role in increasing the Gross Enrolment Ratio (GER) while addressing the professional challenges faced by educators in a digital age.

- **Strategic and Economic Security:** Evaluating India’s maritime and continental security imperatives alongside the role of startups, financial inclusion, and the circular economy in building a resilient \$30–\$40 trillion economy.

- **Cultural and Digital Identity:** Exploring the preservation of folk literature and regional languages in digital spaces to ensure that development remains inclusive and culturally representative.

Ultimately, this work aims to provide a roadmap for policymakers and academicians, advocating for a “Security-Development Nexus” where national power is built upon deep-tech *Aatmanirbharta* and ethical governance.

*Dr. Subhash Sihag*

*Dr. Vikrant Mohan*



## Chief Editorial Message

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It is a matter of immense pride and academic satisfaction to present this edited volume, which serves as the formal published outcome of the One Day National Seminar on “**Viksit Bharat 2047: Challenges, Opportunities and Roadmap,**” organized by the Internal Quality Assurance Cell (IQAC) of Government College Bhattu Kalan on February 07, 2026.

As a sense of sincere responsibility and realization of whole hearted duty, I hereby submit this volume of academic work for your consideration. The collection of these papers represents the collective efforts of a number of scholars, teachers and experts without whom the publication of the book would not be possible. As the editor of this book, I am honored to take the readers through the pages that dig into a complex web of challenges and opportunities while getting into self-reliance and Viksit Bharat. This book is not merely a compendium of research papers but a rare rainbow colored rubies that capture the value of indigenous knowledge, civilizational values and ancient heritage. This volume is a rigorous exploration of the burning issues of the day. I hope that researchers, policymakers and various charity groups will find inspiration and guidance within these pages to bring positive change in them.

As India marches toward the centenary of its independence, the vision of a “Viksit Bharat” (Developed India) has transitioned from a national aspiration to a strategic imperative. This transformation requires a fundamental shift in our collective consciousness—one that harmonizes our rich civilizational heritage with modern scientific progress. Educational institutions, as the nurseries of future leaders, bear the primary responsibility of decoding this roadmap and preparing the youth for the challenges of a globalized world.

This book is a compilation of rigorous research and visionary insights that explore the multi-dimensional facets of national development. A core theme that resonates throughout these pages is the integration of *Indian Knowledge Systems (IKS)* and indigenous practices into our modern framework. Whether it is reviving the ethical foundations of *Dharma* in governance or adopting Zero Budget Natural Farming for ecological security, the contributors have successfully argued that India’s path to development must be uniquely Indian.

The chapters within this volume delve into critical areas such as:

- **The Paradigm Shift in Higher Education:** Exploring how the National Education Policy (NEP) 2020 serves as the catalyst for a research-driven, multidisciplinary academic ecosystem.
- **Socio-Economic Resilience:** Analyzing the role of startups, digital inclusion, and labour reforms in building a robust and inclusive \$30 trillion economy.
- **Strategic Sovereignty:** Addressing the security imperatives and the necessity of *Atmanirbharta* (self-reliance) in technology and defense.

I extend my heartfelt congratulations to the Internal Quality Assurance Cell (IQAC) for their visionary leadership in organizing this seminar. I specifically commend the editorial team, led by **Dr. Vikrant Mohan**, for their meticulous efforts in selecting and refining the research papers included in this volume. Their dedication has ensured that this publication is not merely a record of proceedings but a valuable resource for students, researchers, and policymakers.

I am confident that the ideas shared in this book will spark further intellectual discourse and inspire our academic community to contribute meaningfully toward the realization of a developed, equitable, and sustainable India by 2047. I would like to summarize it all stating that the volume on “**Viksit Bharat 2047: Challenges, Opportunities and Roadmap**,” is more than a compendium of research papers— it is a call to action.

**Dr. Subhash**

Principal

Government College Bhattu Kalan, Fatehabad, Haryana

# Editorial Message

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The One Day National Seminar held on **February 07, 2026**, marked a significant milestone for the academic community at **Government College Bhattu Kalan**. As the editor, it is my privilege to present *Viksit Bharat 2047: Challenges, Opportunities and Roadmap*, a volume that reflects a collective commitment to rigorous inquiry and visionary thinking at a critical juncture in our national journey.

This book is the culmination of extensive deliberations on how India can leverage its demographic vitality and technological capabilities to overcome systemic challenges. The research compiled here represents more than theoretical exercises; these are evidence-based insights designed to bridge the gap between our rich traditional wisdom and modern scientific exploration. From examining the pedagogical relevance of the Gurukul system to analyzing the strategic implications of Artificial Intelligence, each contributor has added a vital layer to our collective roadmap for 2047.

The diverse perspectives within this volume cover a broad spectrum of pillars essential for a developed India:

- **Educational Reform:** Insights into NEP 2020 and the revolutionizing of Indian Higher Education.
- **Economic & Legal Frameworks:** Critical analyses of labor codes, the role of startups, and the rationale behind simultaneous elections.
- **Science & Sustainability:** The vital roles of Chemistry and Physics in innovation, alongside strategies for a Circular Economy, Renewable Energy, and sustainable Agriculture.
- **Social Empowerment & Culture:** Discussions on the digital empowerment of women, financial inclusion, and the preservation of cultural identity through folk literature.

I would like to extend my heartfelt gratitude to our Patron, **Dr. Subhash Sihag**, Principal of Government College Bhattu Kalan, for his unwavering support and his foundational contributions regarding Indian civilizational values and indigenous practices. Special appreciation is also due to the **Internal Quality Assurance Cell (IQAC)** for their meticulous organization, and to the contributors from various prestigious institutions whose research forms the bedrock of this publication.

It is our hope that this volume serves as a catalyst for further dialogue and action. By integrating our past wisdom with our future aspirations, we can ensure that the India of 2047 stands not only as a developed economy but as a resilient, stabilizing pole in the global order.

**Dr. Vikrant Mohan**

Editor & Convener, IQAC

Assistant Professor of Commerce

Government College Bhattu Kalan, Fatehabad

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# Indian Civilizational Values and Their Global Impact

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## Abstract

Civilization is highly advanced stage of social and cultural development of a large, organized group of people, society, community, or nation having rich culture, advanced trade and technology, intensive agriculture and storage, skilful workers, written language, stable food supply, proper social structure, organized government, ideological outlook and job oriented education system. In the words of A. L. Basham, "Civilization begins when a workable system of living—an ordered relationship between man and nature—is established." Indian civilization aims to harmonize the self, society and universe, seeking unity in diversity. The study of our civilization is relevant today as it highlights India's global impact, special in the fields of yoga, spirituality, science, meditation, education, holistic wellness, philosophy, culture, metallurgy and advanced urban planning. The rhythm of Indian civilization aligns with nature. It believes in spiritual practices, moral values and agricultural cycles or rotation. It fosters care, respect and time for nature. Our civilization ensures sustainability and enhancement rather than exploitation.

Indian civilization, one of the most ancient and enduring cultural traditions, has exercised a profound and far-reaching influence on global intellectual, ethical, and spiritual paradigms. Its foundational values—rooted in pluralism, non-violence, spirituality, and ecological consciousness—offer enduring frameworks for addressing contemporary global challenges. This paper examines key Indian civilizational values and evaluates their enduring global impact, particularly in fostering peace, intercultural dialogue, sustainable living, and philosophical inquiry. It explores major Indian civilizational values and evaluates their influence on contemporary global discourses, including multiculturalism, peace studies, sustainability, and comparative philosophy.

**Keywords:** Indian civilization, Ahimsa, Dharma, pluralism, spirituality, Indian knowledge systems, environmental ethics, global impact.

## **1. Introduction**

Indian civilisation encompasses a rich and diverse cultural heritage shaped by the blending of various races and traditions over time. It serves as a comprehensive framework for India's historical and cultural development, influenced by religious, moral, and scientific elements that promote a harmonious society.

Indian civilization represents a continuous and dynamic cultural tradition distinguished by its philosophical depth and ethical inclusivity. The Indian civilizational ethos has evolved while preserving its foundational values. These values are not confined to historical texts but continue to inform contemporary practices and global intellectual frameworks. This paper seeks to examine how selected Indian civilizational principles have contributed to global thought and practice in meaningful ways. The paper explores how India projects social cohesion, ancient values, reverence for nature and a value-based, inclusive, and eco-friendly model for global harmony and civilizational authority on the world stage. It analyses how Indian philosophical traditions foster socio-cultural unity.

## **2. Unity in Diversity**

India is in land of diversity, known for its vibrant culture and ancient civilization. The cultural heritage of India has made it home to some of the most ancient civilizations, making it a country with a rich past and a dynamic present. The diverse Indian culture is an amalgamation of various regional customs, rituals, and traditions that have been passed down from generations to the present. The principle of unity in diversity constitutes a defining feature of Indian civilization, reflecting its remarkable capacity to integrate diverse linguistic, religious, and cultural traditions within a cohesive civilizational ethos. This pluralistic orientation is neither incidental nor superficial; rather, it is deeply embedded in India's historical and philosophical consciousness.

India's socio-cultural fabric accommodates multiple religions, languages, and traditions, fostering coexistence without enforced uniformity. This integrative approach reflects a deep-rooted philosophical acceptance of plurality (Sen, 2005).

### ***Global Perspective:***

In an increasingly globalized yet fragmented world, this model of coexistence offers a viable paradigm for multicultural societies. It has informed contemporary discourses on pluralism, democratic inclusivity, and intercultural harmony, providing a framework for managing diversity without erasing difference. Nations grappling with diversity increasingly draw upon India's model to promote inclusivity and social harmony.

In modern multicultural societies, the Indian model offers a constructive framework for balancing diversity and cohesion. It informs policies and academic debates on inclusivity, identity, and intercultural dialogue, particularly in pluralistic democracies.

### **3. Non-Violence and Peaceful Coexistence**

The doctrine of Ahimsa (non-violence), articulated with philosophical rigor in Indian traditions such as Jainism, Hinduism and Buddhism, and later operationalized in socio-political contexts, represents a cornerstone of Indian ethical thought. It extends beyond physical non-violence to include compassion in thought and action. This idea has been articulated in religious traditions and later adapted into socio-political movements (Gandhi, 2001). It advocates not merely the absence of violence but the active cultivation of compassion and respect for all life forms. Non-violence and peaceful coexistence are fundamental and permanent pillars of Indian civilizational values. Our ancient values like 'unity in diversity', sarva-dharma-Samanatva, Satyagraha, avoidance of harm in word, thought and deed emphasize respect for all the natural phenomena. Compassion, non-cruelty and harmony have shaped Indian thoughts from the ancient time and continue to influence its post- independence identity and foreign policy.

#### ***Global Perspective:***

Non-violence has inspired global leaders like Martin Luther King Jr and Nelson Mandela and many others and their movements advocating civil rights and freedom through peaceful means. Its application in civil resistance has demonstrated that moral force can serve as an effective alternative to coercive power. Non-violence has influenced international peace discourse and strategies for conflict resolution strategies.

### **4. Yoga, Spirituality and Self-Realisation**

Indian civilization privileges the inward journey of self-realisation, emphasizing the discovery of the self (Atman) and its unity with ultimate reality (Brahman). Classical texts such as the Upanishads and the Bhagavad Gita articulate a sophisticated philosophy of spiritual introspection and ethical action (Easwaran, 2007).

Yoga, in the present time, is a global practice for mental, physical and emotional well-being, proven to reduce stress, enhance flexibility and improve mental clarity. It builds discipline and morality, harmonizes body, mind and breath, develops awareness and clarity and prepare for Moksha. Yoga teaches us moral discipline, self-observation, self-study, and contentment through surrender. Yoga here means disciplined methods- meditation, moral restraints, concentration, and devotion-used to transform mind and realize

truth; almost every school links philosophy with some yogic practices. Yoga validates the adage that a healthy mind resides in a healthy body.

### ***Global Perspective:***

In recent decades, Indian spiritual practices particularly yoga and meditation have gained widespread global acceptance. These practices have influenced contemporary approaches to mental health, stress management, and holistic well-being, contributing to a growing global emphasis on mindfulness and inner balance. These practices are increasingly integrated into healthcare, education, and corporate environments to promote mental and emotional well-being.

### **5. Emphasis on Dharma**

Indian civilization encompasses values, duty ethics, love and harmony with nature. It has uninterrupted traditions from the Indus Valley through Vedic periods to modern times. Dharma includes principles of ethical governance. It is parallel to modern public service ideals, emphasizing welfare, ethics and leadership. It is the act of automating oneself through one's own efforts.

India symbolizes as a lighthouse of civilizational wisdom. It has deep spiritual and philosophical roots, enduring religions (Hinduism, Buddhism, Jainism, Sikhism) and vibrant tradition in art, literature and festivals, all unified by Dharma (duty and righteousness) and tolerance. It accepts and respects diverse faiths, beliefs, culture, rituals and co-existing ideals. It emphasizes on the four essential goals of human life (Purusharthas): dharma (duty and righteousness), artha (prosperity), karma (pleasure), and moksha (liberation). These Purusharthas provide a balanced approach for human existence. Indian civilization has rich cultural heritage. It is famous for its Vedic chanting and literature, classical music and dance (Kathak and Bharatanatyam), intricate temple architecture and vibrant festivals. It focuses on enduring values like strong family ties, respect for elders and family members, care for nature, consciousness towards deep rooted tradition of hospitality and a balance between state and society. Ours is the civilization that adapted and preserved core values and contributed significantly to the world culture, science and spirituality. It values sustainability, harmony and balance with nature and the cosmos.

The concept of Dharma occupies a central position in Indian ethical and philosophical discourse. It signifies duty, righteousness, and the moral order that sustains both individual conduct and societal harmony (Radhakrishnan, 1999). Unlike rigid legalistic frameworks, Dharma is context-sensitive and dynamically interpreted.

***Global Perspective:***

Dharma has contributed to global ethical thought by foregrounding duty-based morality and social responsibility. It resonates with contemporary discussions on ethical governance, justice, and the moral obligations of individuals within society.

**6. Science and Indian Knowledge Systems**

Ancient Indian civilization demonstrated remarkable advancements in diverse fields such as mathematics, astronomy, medicine, and linguistics. Texts like the Ayurveda, Arthashastra, and works on mathematics demonstrate scientific inquiry and innovation. The development of the decimal system and the concept of zero, along with sophisticated medical knowledge in Ayurveda, exemplify India's scientific acumen (Basham, 2004). The dire need of the present hour is to protect our knowledge system otherwise it will lose slowly and slowly. It is only through IKS that we can become ordinary to extraordinary. It has the potential of converting bad things into good. It represents the rich heritage and eternal wisdom of India. It is the knowledge transmitted over several millennia. It is developed in Indian subcontinent through lived experiences; observations and practices. It is well said 'if you donate someone, donate knowledge to him'.

The integration of indigenous knowledge with modern sustainable practices can offer solution to some of the burning issues of the present time like climate change, resource depletion and environment degradation etc. Indigenous knowledge system, self-reliance and sustainability provide valuable framework for navigating the challenges of 21<sup>st</sup> century. By learning from indigenous practices, modern societies can adopt more holistic, respectful and sustainable ways of living, honoring both the environment and future generations. The principles of balance, interconnectedness and respect for nature embodied in indigenous world views are vital for fostering sustainable future. We need to recall our golden past where the perfection of man was harmonized with the perfection of indigenous knowledge and environment. If the matchless grace of man reduces to the slightest degree, the perfect balance between man and nature is lost. The objective of this volume is to understand the role of indigenous knowledge in achieving self-reliance and sustainability.

To stand in the present, draw inspiration from the past and face the future with foresight-this is the essence of our timeless wisdom. In our time tested values lay the solution of our present day problems. Indian civilization is 'Rooted in Past, footed in present and focus in Future.' India's identity is shaped by the unique characteristics of sanatana Dharma. The biggest crisis today is a lack of its understanding. Sanantana does not refer to some

ideological concept that emerged from a specific period of time. Sanatana means eternal and continuous, that which is constant and everlasting.

***Global Perspective:***

Indian numerals, the concept of zero, and advancements in medicine have shaped global scientific progress. In the contemporary context, there is a renewed scholarly interest in integrating traditional Indian knowledge systems with modern scientific inquiry, particularly in areas such as medicine, ecology, and cognitive sciences.

**7. Global Cultural Heritage**

Indian civilization is one of the world's oldest, most resilient, and continuously evolving cultures, emphasizing multi-ethnic, multi-lingual and multi-religious society, rituals, ancient practices, spiritualism, moral values, early scientific and philosophic advancements and "simple living and high thinking". It prides itself on unity in diversity, incorporating various religions, languages, traditions and arts while focusing on truth, non-violence and social harmony, often holding up against materialist influences. India's cultural heritage—encompassing literature, performing arts, architecture, and philosophy—represents a rich repository of human creativity and expression. Epics such as the Ramayana and the Mahabharata continue to shape cultural narratives across Asia and beyond (Thapar, 2002). These traditions embody philosophical themes and aesthetic principles that continue to inspire artistic and literary works worldwide. When we remind of our glorious past —where we used to worship our sacred plants and trees like Tulsi, Peepal, Banyan and Khejari, venerate gods and goddesses in the forms of various animals and birds like Gaudha, Jatayu, Eagle, Snake, Lion, Bull, Elephant etc., show reverence to our holy ponds, lake and rivers like Ganga, Yamuna, Saraswati, Pushkar Lake, Kolayat Lake, Mansarovar, Narayan Sarovar, visit various temples and mountains like Mount Kailash (abode of shiva), Mount Meru, Mount Abu, Nanda Devi, Sabarimala, Tirumala Hills, Brihadeeswarar Temple, Kailash temple, Konark temple, Meenakshi Temple, Shore Temple etc. to seek blessings—we are reminiscing and honouring our heritage or drawing power and encouragement to overcome present challenges.

***Global Perspective:***

Through diaspora communities and cultural exchanges, Indian traditions have become integral to global cultural landscapes. Indian festivals, cuisine, music, and classical arts have fostered cross-cultural appreciation and enriched global artistic traditions.

**8. Ayurveda: Indian Medical Heritage**

Ayurveda is an age old Indian holistic healing system specially of human

health, preventing illness through individual care, herbal remedies, environmental adaptation, meditation and yoga, balancing the mind, body and soul and maintaining three vital energies—vata, pitta and kapha.

Ayurveda refers human body as *annamaya*. It focuses on 'you are what you eat'. The effect of food on *tridosa* (vata, pitta, kapha) influences our health system. Ayurveda prefers balanced diet having all six tastes (sweet, sour, salt, pungent, bitter and astringent). A taste based on balanced diet keeps *tridosa* in balance. Just as modern dietetics use calorie as measure of nutrition, Ayurveda assesses nutrition through digestive power, potency of food and physiological effect of food after digestion. Ayurveda focuses on 'what, how much and when and where to eat'. It recognizes the importance of food for human body. "Ayurveda categorically states that proper diet and lifestyle activities play vital role in the maintenance of health and the prevention of diseases, while improper diet and activities are the causative factors for most diseases" (p. 330 IKS ministry of education). Ayurveda is multi-disciplinary and is associated with wide range of subjects like philosophy, yoga and meditation, Astronomy, Ethics, Phonetics, Botany, Material Science and Metallurgy, Agriculture, Veterinary Science, Diet and Nutrition, Water Management, Mathematics, Ecology and Environment etc. All these subjects have developed Ayurveda's understanding of health and diseases and excerpted its own methodologies to diagnose and treat diseases. The age old experienced theories and therapies based on Ayurveda have been tested by thousands of physicians on millions of patients and have stood the test of time.

Ayurveda is not a mere repository of herbal remedies. It deals with the holistic human system including body, mind and consciousness, and its interconnected functions and properties. Its unifying concept of *tridosa* refers not only for human but for birds, animals and plants also. This system of Ayurvedic medicine has served the health of Indian from time immemorial, before the introduction of Western medicine in India. It is a science of life and a holistic health system encompassing all aspects of wellbeing from physical, physiological and psychological to environmental and ecological health.

"According to Caraka Samhita, the terrestrial history of Ayurveda began when sage Bhardvaja passed down his divinely obtained knowledge to other sages for the benefit of all living beings" (P. 296 IKS Ministry of Education). Ayurveda is an antique comprehensive Indian health system of medicine focusing on the balance of *tridosa* in human body through natural remedies, diets, yoga, sports, meditation, viewing health in harmony with the Panch-Mahabhootas. The common practices and treatments followed in Ayurveda are balanced diet, herbal remedies—using natural plants like ginger, turmeric,

Ashwagandha; detoxification (panchkarma or cleansing); body therapies—massage with medicated oils. It is an Indian way of lifestyle adapted as per season to maintain harmony between the body, mind, spirit and environment. It is based on the healthy dietary system of 'Hitbhuk, Mitbhuk and Ritbhuk' advising food that is beneficial for health, moderate in capacity and seasonal.

Sattva, Rajas and Tamas are the three gunas in Ayurveda. All these three gunas are necessary for living a balanced life. Ayurveda aims to cultivate sattvic state of mind and body by minimizing rajasic and tamasic tendencies through diet, yoga, lifestyle and meditation. When these three gunas interact and fluctuate within our mind and body, they influence our thoughts, actions and health. An Ayurvedic doctor can provide proper guidance on balancing these qualities for a healthier and harmonious life.

Goal of Ayurveda is not just absence of diseases but a total balance of body, mind and soul through herbal remedies, panchkarma, disease-specific treatments, constitution based diet, time based daily routine, seasonal diet, sattvic living, mental balance, pranayama, yoga and holistic wellbeing. It prefers self-care and prevention, complete wellbeing and balanced life style than cure. Our vision is to integrate Ayurveda in school curricula to equip and nurture children with lifelong mental, emotional and physical wellbeing and holistic health. We need to create a healthier and happier world all around us where health practices should be given more priorities than wealth.

Ayurveda bothers about our healthcare while allopathy bothers about accumulating wealth. Ayurveda asks its patient about sleep, exercise, yoga, meditation, nutrition, stress, habits and lifestyle while allopathy jumps straight to medication. Ayurveda believe that health is built, not prescribed.

Health is the part and parcel of all subjects. Our Ayurveda is based on the concept of one health. It concentrates not only on the elimination of human sufferings but the sufferings of all living beings. "Praniyon k dukhon ka Nash ho". Our old fasting system was based on resting the body, hormone boosting, immune support, healing, longevity and detoxification of our bodies.

### **Global prespectives**

Ayurveda is rapidly expanding globally as a complementary, sustainable, without side-effect and natural healthcare approach, increasingly popular in Europe, Asia and the West as alternative medicine. Recently India has been chosen to be the WHO- Global Center for Traditional Medicine. There has been a progressive growth in Indian Medicine sector since the formation of Ayush Ministry in 2014.

### **9. Environmental Awareness**

Indian civilization has a deep-seated and time-honoured history of eco-

logical balance through spiritual and artistic traditions, cultural, religious and faith oriented practices, emphasizing harmony between man and nature. Our civilization is rooted in a love for nature, reverence for Pancha Mahabhutas, an insight for ecological practices and sustainable living. It focuses on ecological balance, water management and environmental ethics; aligns with modern sustainability. Temples, ponds, pawaries in the ancient times were sanctuaries of biodiversity and ecological balance. They were surrounded by sacred graves and temple forests, water bodies and water tanks. Sustainable farming is not merely an option, it is essential for maintaining the delicate balance between productivity and ecological health.

Ecological sensitivity is deeply embedded in Indian civilizational thought, which often conceptualizes nature as sacred and interconnected with human existence. Concepts such as reverence for rivers, forests, and animals reflect an ecological consciousness embedded in daily life. Traditional practices often emphasize ecological balance and sustainable living (Shiva, 2005).

#### ***Global Perspective:***

These ecological sensibilities align closely with contemporary environmental movements advocating sustainability and conservation. Indian perspectives contribute meaningfully to global environmental ethics and climate discourse, particularly in promoting harmony between human activity and natural systems.

#### **10. Indian Philosophy**

Philosophy means 'darsana' or 'seeing' or 'vision'. It is a way that allows all to see reality correctly. It is a discipline of understanding the true nature of something. It emphasizes the search for the ultimate truths underlying all phenomena. Indian philosophy teaches us about the creation of the universe through cyclical, divine and energetic processes, notably Lila, Maya, Purusha, and Prakriti. Concepts like Satchitananda resonate with quantum theories, exploring consciousness and the nature of reality. It deals with the symbolic journey from material world to the spiritual enlightenment. Our past depicts that there is an inseparable connection between human, nature and the Divine. There was balance, harmony and order between all the cosmic elements. It aligns devotees with the universal forces.

Indian civilization focuses on introspection. It explores the self, its ties with the universe and ultimate reality. It is reflected in daily life through rituals and festivals. It links inner and outer worlds, emphasizing interconnectedness. It highlights intuition over pure rationality for holistic understanding. Truth (sat), consciousness (cit) and bliss (ananda) are the

main principles of Indian civilization and a gateway to emotional and spiritual bliss. Principles of Indian civilization includes spiritual seeking, holistic living, ethical duties, non-violence, tolerance, unity in diversity and the interconnectedness of humanity, emphasizing a perpetual and perennial tradition of seeking ultimate spiritual liberation or inner truth through manifold paths like devotion, meditation and knowledge.

Indian philosophy encompasses a diverse array of systems, including Vedanta, Nyaya, Samkhya, and Buddhist philosophy, each offering rigorous analyses of metaphysics, epistemology, and ethics (Flood, 1996). These traditions encourage critical inquiry, dialectical reasoning, and intellectual pluralism. Indian philosophy sees human life moving towards a goal, especially moksha—freedom from the cycle of birth and death. Therefore knowledge is not merely information, true knowledge is self-realization that destroys ignorance and leads to liberation; as in Advaita Vedanta where realizing the unity of atman and Brahma frees one from bondage. Life is an inward journey and it can only be known and recognized by our ancient wisdom. It teaches us that happiness lies within us, not in outside of us. We have a Niti—a proper way of living and a map of everyday life and activities—in the ancient India. Human life is a journey from life to death and every journey needs a map. ‘Niti’ is this map. It is a mind-set reflecting values and principles. It goes beyond rules, focusing on practical wisdom for everyday challenges. Nitishastra is the science of taking a wise decision by evaluating what is right and what is wrong. In the past our grandparents teach us the difference between good and bad before going to school. They promote us for good things and demote for the bad things. Their laps were cradles of good things of life

### ***Global Perspective:***

Indian philosophical ideas have significantly influenced global intellectual traditions, particularly in the fields of comparative philosophy, religious studies, and psychology. Concepts such as karma, rebirth, and mindfulness have been assimilated into global philosophical and cultural discourse.

### **II. Conclusion**

Indian civilizational values, characterized by their universality, adaptability, and philosophical depth, continue to exert a profound influence on global thought and practice. In an era marked by ethical uncertainties, environmental crises, and cultural conflicts, these values offer enduring frameworks for fostering peace, sustainability, and holistic human development.

Indian civilization is distinguished by its remarkable continuity, wherein both its material and intangible dimensions have endured across millennia.

Ancient scriptures such as the Vedas, systems of governance grounded in the principle of Dharma, and a rich legacy of artistic expression have persisted alongside modern developments, reflecting a dynamic yet cohesive cultural tradition.

At the heart of this continuity lies a profound spiritual ethos shaped by enduring concepts such as Dharma and Karma. These principles have fostered a flexible and inclusive cultural framework that resists rigid dogma. Instead, Indian spirituality has demonstrated a unique capacity for adaptation, engaging with and assimilating diverse influences—from Buddhism and Jainism to Islam and Christianity—while preserving its essential philosophical core.

Moreover, intellectual traditions such as Vedanta and Yoga continue to exert a global influence, offering insights into the nature of existence, consciousness, and human well-being. This seamless blending of continuity and adaptability underscores the resilience of Indian civilization, enabling it to remain relevant and inspiring in an ever-evolving world.

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# Indigenous Practices in Building a Self-Reliant India

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## **Abstract**

Indigenous practices refer to our local traditional agricultural methods, crafts, healing rituals, storytelling method, skills, techniques, customs, beliefs, knowledge, value to Panch Mahabhootas and way of life passed down from generation to generation in a unique way to specific indigenous communities in distinct groups with ancestral ties to specific regions, generally facing marginalization while handling genetic, biological and ecological diversity. These local communities are spiritually connected to all the things, giving meaning and life to them. When these practices are integrated with modern science, they provide sustainable, localized solutions in healthcare, agriculture, resource management, environmental stewardship, forest conservation, climate resilience and technology, fostering self-sufficiency and sustenance and boosting moral, spiritual and economic growth.

Indigenous Knowledge by its oceanic elixir and healing remedies can boost every discipline, enrich every subject, manage every natural resource and beautify or maintain balance between all the building blocks (The Panch Mahabhootas) of the universe, alleviate the sufferings of all the living beings and uplift every individual physically, morally, spiritually and intellectually. It is synonymous with visionary thinking. It keeps the health fit, mind strong and all the three doshas in balance. It nurtures all the aspects (physical, social, emotional, intellectual, creative and spiritual) of an individual. It is against the consumption of fast food, fast fashion and fossil fuels. It believes in reducing plastic, poison, pollution, pesticides and population. The paper aims to integrate traditional Knowledge, sustainable practices and local innovations with modern science fostering an Atmanirbhar and inclusive nation by 2047. If adopted judiciously the traditional practices can contribute to sustainable development in the contemporary world, especially in the face of environmental challenges like climate change, natural resource depletion, and loss of biodiversity.

The paper highlights traditional agricultural techniques are being revitalized to ensure sustainability, environmental conservation, and food security. Similarly, it stresses the significance of the rejuvenation of traditional healthcare systems like Ayurveda, Yoga, Siddha, and Unani medicine,

alongside modern approaches, to foster holistic health and well-being. India@2047 envisions a dynamic Indian Knowledge System contributing to sustainable development, societal welfare, and global leadership. This vision aims to uphold India's rich cultural heritage while seamlessly integrating traditional wisdom into contemporary practices, thus positioning the nation as a global leader in sustainable and inclusive growth. Specifically, the paper blends indigenous techniques like traditional agricultural practices, organic farming and Ayurveda, Yoga and Meditation with modern healthcare and agricultural practices to bring sustainable, innovative and holistic solutions.

**Keywords:** Indigenous practices, self-reliant India, traditional knowledge, ecological diversity, Zero Budget Natural Farming (ZBNF), SDG 3, AYUSH healthcare systems.

### 1. Introduction

India's aspiration to become a developed nation by 2047, marking 100 years of independence, is embodied in the vision of *Viksit Bharat*. This ambitious blueprint envisions a country defined by sustained economic prosperity, social equity, and strong human development. Central to this vision is the transformation of the agricultural and healthcare sectors, reflecting the understanding that a healthy population and a resilient food system form the bedrock of sustainable development and long-term economic growth. Rooted in profound ecological wisdom and community-based knowledge systems, Indigenous practices offer sustainable, locally driven solutions to pressing contemporary challenges, including climate change, resource depletion, and ecological imbalance.

The Viksit Bharat Vision 2047 foregrounds the rejuvenation of Indigenous knowledge systems as a central pillar in India's pursuit of sustainable and inclusive development. Spanning areas such as sustainable agriculture, traditional medicine, water management, and biodiversity conservation, these practices are increasingly acknowledged as time-tested, scientifically grounded, and socially resilient. The vision underscores the importance of integrating traditional agricultural systems with modern innovations, strengthening healthcare infrastructure, ensuring universal health coverage, and fostering advancements in medical research and technology. The United Nations' Sustainable Development Goal 3 (SDG 3) seeks to "ensure healthy lives and promote well-being for all at all ages." Its targets—ranging from reducing maternal mortality and ending epidemics of communicable diseases to achieving universal health coverage—underscore the centrality of health to sustainable development. For India, aligning national health policies with SDG 3 is not merely a commitment to

a global framework; it is a strategic imperative for realizing the vision of *Viksit Bharat @2047*—a self-reliant, equitable, and prosperous nation. India's development trajectory recognizes that economic growth and social well-being are deeply interconnected.

## **2. Indigenous Agricultural Practices: Imperative for Resource and Biodiversity Sustainability**

Agriculture has long been the backbone of India's economy, with nearly half of the population still dependent on farming and allied activities for their livelihoods. It continues to play a vital role in the national economy, contributing approximately 15% to the country's gross value added (GVA). Indigenous agricultural practices adopted by local communities are deeply rooted in traditional knowledge systems that have evolved through generations of close interaction with nature. These practices are integral to the preservation of ecosystems and biodiversity, and play a crucial role in sustaining soil health, food security, and human well-being.

The contemporary agricultural landscape in India is beset with profound challenges. The excessive and prolonged dependence on chemical fertilizers and synthetic pesticides has undermined the ecological sustainability of farming systems, resulting in stagnating productivity, constrained income growth for farmers, and growing concerns over food safety and nutritional security. Furthermore, continuous mono-cropping depletes topsoil, erodes soil fertility, contaminates groundwater, and diminishes beneficial microbial populations. Over time, these processes weaken crop resilience, rendering plants increasingly vulnerable to pests and pathogens, and further intensifying farmers' dependence on external chemical inputs.

These challenges are particularly acute for small and marginal farmers, who face mounting pressures from privatized seed systems, rising input costs, and limited access to nearby and remunerative markets. Escalating production expenses, high interest rates on agricultural loans, volatile crop prices, and increasing dependence on private inputs have collectively pushed farmers into a vicious cycle of indebtedness. The human cost of this crisis is stark: over 250,000 farmer suicides have been reported in India during the past two decades, with numerous studies attributing many of these tragedies to overwhelming financial stress.

## **3. Practice of Zero-Budget Natural Farming (ZBNF)**

In response to the challenges confronting the contemporary agricultural landscape, Zero Budget Natural Farming (ZBNF), also known as Subhash Palekar Natural Farming (SPNF) was promoted by agriculturist & Padma Shri awardee Subhash.Palekar, in the mid-1990s as an alternative to the Green Revolution's methods driven by chemical fertilizers and pesticides

and intensive irrigation. This farming approach emphasizes substantial cost reduction while ensuring the production of safe, nutritious, and environmentally sustainable food.

“ZBNF is self-nourishing and symbiotic in nature” (Palekar, 2014). It is a way of farming, which is based on minimum use of external inputs, no use of chemicals, minimum disturbance to soil, use of local bio-resources for production. ZBNF improves long-term soil structure, moisture retention, and disease resistance. It is particularly effective for small-scale farmers, providing financial stability and reducing dependency on debt. ZBNF represents a revival and systematic application of India’s indigenous agricultural knowledge systems. Grounded in time-tested Indian farming wisdom, ZBNF emphasizes self-reliance, ecological harmony, and minimal external dependency, thereby aligning closely with the vision of sustainable development articulated in NEP-2020 and the Indian Knowledge Systems initiative. By prioritizing indigenous cattle and utilizing cow-based natural inputs derived from dung and urine, ZBNF seeks to regenerate soil health, enhance microbial activity, and ensure the production of chemical-free, nutritionally safe food. As a policy-relevant model, ZBNF integrates traditional knowledge with contemporary sustainability goals, offering a scalable pathway toward agrarian resilience, farmer welfare, and food sovereignty.

### **3.1 Four Pillars of ZBNF**

The system of ZBNF is based on four core principles: Beejamrutha (seed treatment), Jeevamrutha (liquid bio-fertilizer) mulching, and Wapsa (moisture conservation), which collectively enhance nutrient availability, create a favourable micro-climate, and protect crops using locally sourced tree leaves.

#### **(A) Beejamrutha**

Beejamrutha is a product which contains ingredients viz., cow dung (5 kg), cow urine (5 L), lime (50 g) and 20 L water. It is being used by the natural farming farmers for seed or seedling treatment which was found to increase seed germination and seedling growth as it contains growth hormones and beneficial microflora. Devakumar et al. (2014) reported that beejamrutha formulation having a pH of 8.02, contained nutrients like nitrogen, phosphorus and potassium (2.38%, 0.127% and 0.485%, respectively) and also Mg (16 ppm) and Cu (36 ppm). They also found that there was maximum microbial load in beejamrutha on the day of preparation, and later on, there was sharp decline in their number as the days elapsed and it was minimum on 7th day after preparation. Hence, they opined that beejamrutha should be used on the day of preparation.

**(B)Jeevamrutha**

Palekar (2006) defined jeevamrit or jeevamrutha as a fermented liquid product which is prepared by mixing desi cow dung (10 kg), desi cow urine (10 litres), chemical free jiggery (2 kg), pulse flour (2 kg) and a handful of soil brought from the bunds of the cultivated lands or forest soil. Jeevamrutha also contains enormous amount of beneficial microbial load which on application enhances microbial activity in soil and ultimately ensuring the availability and uptake of nutrients by the crops. Vasanth kumar (2006) reported that jeevamrutha is not a source of nutrients, but it is a fermented liquid product which contains huge quantity of microbial load which will enhance soil bio-mass upon its application to the soil even at very lesser rate as it acts as a tonic to the soil and helps in improving soil health. Devakumar et al. (2008) reported that maximum microbial population in jeevamrutha was observed between 9th and 12th day of the preparation of jeevamrutha. Application of jeevamrutha along with the other organic inputs helps to improve the nutrient mineralization and improve the nutrient availability along with enhancing the soil fertility.

**(C)Acchadana/Mulching**

Mulching is done by soil mulch, straw mulch or live mulch (spreading legumes) it conserves soil moisture, by reducing evaporation. Natural farming practices place strong emphasis on efficient water management through the adoption of techniques such as mulching, drip irrigation, and rainwater harvesting. These practices significantly reduce water loss, prevent soil erosion, and enhance soil moisture retention. Among them, mulching is a widely adopted practice by farmers for effective weed suppression and conservation of soil moisture.

In Zero Budget Natural Farming (ZBNF) / Subhash Palekar Natural Farming (SPNF), mulching is carried out using naturally available and locally sourced materials such as crop residues, dry leaves, straw, and other biomass. Mulching constitutes one of the most critical pillars for the success of natural farming systems, as it creates a favourable microclimate for the multiplication and activity of beneficial soil microorganisms. This microbial proliferation is essential for the effective functioning of *Jeevamrutha*, which acts as a rich microbial consortium rather than a direct nutrient input.

**(D)Waaphasa**

Waaphasa is maintenance of soil particle spaces with 50 percent air and 50 percent water vapor (Palekar, 2006), Waaphasa promotes soil aeration through a favorable microclimate. Farming practices must prioritize a balance between soil air and soil water. However, conventional methods following intensive chemical use, heavy machinery, and limited organic

inputs—have disrupted this balance, leading to common issues like soil compaction. This compaction negatively impacts both crop performance and soil health. Maintaining Waaphasa or the equilibrium between soil air and water, is crucial and can be effectively achieved through natural farming practices, which help sustain this vital balance. It is worth mentioning that Government has been promoting organic farming under the dedicated scheme of ParamparagatKrishiVikas Yojana (PKVY) which encourages all kinds of chemical-free farming systems including Zero Budget Natural Farming.

#### **4. Health and Healing: The Role of Indigenous Knowledge and Holistic Care**

Health emerges as a foundational pillar of national progress. The government's articulated goals—enhancing life expectancy, reducing disease burden, and ensuring health equity across socio-economic and geographic divides—closely mirror the objectives of SDG 3. Achieving these goals requires a health system that is inclusive, preventive, and resilient.

Indigenous practices in health and healing are integral to India's civilizational ethos and form a vital component of the Viksit Bharat vision. Traditional medicine systems—Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Sowa-Rigpa (AYUSH)—offer holistic, preventive, and person-centred approaches to well-being. Unlike the predominantly curative orientation of conventional biomedicine, these systems emphasize *Dinacharya* (daily routines), *Ayurveda Aahar* (balanced and mindful nutrition), Yoga, and mental discipline as tools for disease prevention and long-term wellness.

Such approaches are particularly relevant in addressing lifestyle-related non-communicable diseases (NCDs) such as diabetes, hypertension, cardiovascular disorders, and obesity, which are rising rapidly across India. By focusing on prevention, balance, and self-care, indigenous systems can reduce long-term healthcare costs, alleviate pressure on tertiary care facilities, and improve quality of life.

Rejuvenating and mainstreaming traditional knowledge systems is therefore not a cultural exercise alone, but a pragmatic strategy for ensuring affordable, accessible, and comprehensive healthcare. A nation that values and invests in its home-grown knowledge and innovations is better equipped to address its unique challenges while contributing meaningfully to global health discourse.

#### **4.1 Global Recognition and Contemporary Relevance**

The World Health Organisation (WHO) acknowledges traditional, complementary, and integrative medicine as an important source of primary

healthcare, valued for its cultural relevance, accessibility, and personalised nature. With growing emphasis on evidence-based validation of traditional practices, global and regional health bodies increasingly recognize their potential contribution to health equity—especially in contexts where affordability, trust, and cultural familiarity influence healthcare choices. In India, this recognition aligns well with contemporary health challenges. Rapid urbanisation, sedentary lifestyles, poor dietary habits, and rising stress levels have intensified the burden of NCDs, affecting not only individual health outcomes but also workplace productivity and economic efficiency. In response, many Indian organizations are adopting holistic workplace wellness programmes that integrate yoga, mindfulness, nutrition counselling, regular screenings, mental health support, and stress management. These initiatives reflect a shift toward preventive and integrative healthcare models that resonate strongly with SDG 3.

Rural areas in India face chronic shortages of skilled healthcare professionals and inadequate infrastructure—nearly 80% of community health centres lack sufficient staff, and only about 20% of public health facilities meet minimum quality standards. Public healthcare expenditure stands at approximately 2.1% of GDP, below the National Health Policy 2017 target of 2.5% and far short of the 5% recommended for robust universal health coverage. Preventive care remains underfunded, receiving only about 14% of the health budget, while curative services dominate spending priorities. These systemic constraints pose significant risks to India's SDG 3 commitments and its broader *Viksit Bharat* ambitions.

## **5. Conclusion**

Initially, Green Revolution technology helped to boost yields and revenues in comparison to conventional methods. Due to the ensuing intensive, high-input agriculture that depends on chemical pesticides, fertilizers, and irrigation, there is proof of environmental deterioration and adverse health effects linked to synthetic chemical exposure (Bhattacharyya et al., 2015). Green Revolution had negative effects such as soil erosion, biodiversity losses, growing agricultural costs, etc. whereas ZBNF depends more on soil biology than soil chemistry (Kumar et al., 2020). Natural farming entails using only natural methods and no chemicals (Fukuoka, 2009). Natural farming promotes a healthier soil ecosystem by supporting beneficial soil microflora, which are essential for nutrient cycling and overall soil health. This practice also contributes to a pollution-free environment by completely avoiding chemicals and any kind of synthetic inputs. This approach may provide an effective model, particularly for perennial tree crops, where natural farming principles—centered on minimal external inputs—have shown promise in sustaining yields while reducing input costs. There is a pressing

need for scientific validation of ZBNF, which will allow for a clearer understanding of its potential and limitations. So far as India's health vision and SDG 3 targets are concerned, they are attainable, provided the nation commits to bold policy reforms, sustained public investment, and inclusive growth strategies. By combining modern medical advancements with its rich indigenous knowledge systems, India can build a health system that is preventive, people-centred, and resilient. A healthy population is not only a prerequisite for economic development but also the foundation of a just, equitable, and prosperous society—one that truly embodies the spirit of Viksit Bharat @2047.

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# Revolutionizing Indian Higher Education: A Blueprint for Viksit Bharat 2047

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## Abstract

This research paper provides a comprehensive analysis of the Indian higher education system, examining its current statistical landscape, persistent systemic challenges, and the transformative reforms introduced by the National Education Policy (NEP) 2020. Drawing on data from the All India Survey on Higher Education (AISHE) 2021-22, the study highlights a system comprising 1,168 Universities and 45,473 Colleges supporting an enrollment of 4.33 crore students [AISHE 2021-22]. While participation has grown—notably with a female Gross Enrolment Ratio (GER) of 28.5 now exceeding that of males—the sector continues to struggle with structural fragmentation, rigid disciplinary silos, and a lack of research funding, which remains stagnant at 0.69% of the GDP [NEP 2020].

The NEP 2020 addresses these crises by proposing a total overhaul of the system, centered on restructuring HEIs into large multidisciplinary clusters and phasing out the affiliating college system over 15 years [NEP 2020]. Key policy interventions analyzed include the four-year undergraduate program with multiple entry and exit points, the Academic Bank of Credit (ABC), and the establishment of the National Research Foundation (NRF) to seed research across state universities [NEP 2020]. Furthermore, the paper evaluates the shift toward a “light but tight” regulatory framework under the Higher Education Commission of India (HECI), which aims to empower institutions with academic and administrative autonomy [NEP 2020].

Despite these visionary goals, the study identifies critical implementation hurdles, such as the digital divide that threatens equitable access to online education and the historical inability of the government to meet the 6% GDP investment target [NEP 2020]. The analysis concludes by outlining a path forward that emphasizes institutional leadership through independent Boards of Governors and a strategic vision to achieve a 50% GER by 2035 as a critical milestone for the Viksit Bharat 2047 vision [NEP 2020]. Success is determined to be dependent on synchronized action between the Ministry of Education and state stakeholders to ensure these reforms

sustainably transform India into a global knowledge superpower [NEP 2020].

**Keywords:** National Education Policy (NEP), Indian higher education system, All India Survey on Higher Education (AISHE).

### **1. Introduction**

Education is fundamental for achieving full human potential, developing an equitable and just society, and promoting national development. As India progresses toward the centenary of its independence, the vision of Viksit Bharat 2047 necessitates a higher education system that acts as the primary engine for social justice, economic growth, and scientific advancement. Providing universal access to quality education is not merely a social goal but the essential key to India's continued ascent and leadership on the global stage. India will have the highest population of young people in the world over the next decade, and the nation's ability to provide high-quality educational opportunities to them will determine its future trajectory as a developed country and one of the three largest economies in the world.

The global education development agenda, reflected in Sustainable Development Goal 4 (SDG4), seeks to ensure inclusive and equitable quality education by 2030, a goal that requires the entire Indian education system to be reconfigured to support and foster lifelong learning. This reconfiguration is urgent because the world is undergoing rapid changes in the knowledge landscape. Dramatic scientific and technological advances, such as the rise of big data, machine learning, and artificial intelligence, are rendering unskilled jobs redundant while creating an unprecedented demand for a workforce skilled in mathematics, computer science, and data science, utilized in conjunction with multidisciplinary abilities. To thrive in this new ecosystem, students must not only acquire knowledge but, more importantly, learn how to learn, shifting away from rote memorization toward critical thinking, creativity, and innovation.

The current scale of the Indian higher education sector is vast, yet it remains burdened by historical inefficiencies. According to the All India Survey on Higher Education (AISHE) 2021-22, the system manages an estimated 4.33 crore students across 1,168 Universities and 45,473 Colleges. While the national Gross Enrolment Ratio (GER) has increased to 28.4, the system faces a "learning crisis" where a large proportion of students lack foundational capacities, and the higher education ecosystem remains severely fragmented. Rigid disciplinary silos and a heavy-handed regulatory regime have historically stifled institutional autonomy and faculty motivation, preventing Indian HEIs from reaching global excellence.

In response to these developmental imperatives, the National Education Policy (NEP) 2020 was introduced as the first education policy of the 21st

century. It proposes a complete overhaul of the education structure, aiming for a system that is “second to none” by 2040. The policy seeks to restore India’s heritage as a “Vishwa Guru” by drawing inspiration from world-class ancient institutions like Takshashila and Nalanda, which set the highest standards of multidisciplinary teaching and research. By moving toward large, multidisciplinary universities and phasing out the affiliated college system, the NEP 2020 provides the blueprint for a vibrant knowledge society.

Thus, the higher education system in India stands at a critical juncture, balancing the weight of ancient scholarly traditions with the urgent imperatives of a 21st-century knowledge economy. As the world transitions toward a landscape defined by artificial intelligence, big data, and machine learning, the demand for a highly skilled, multidisciplinary workforce has never been greater [NEP 2020]. To address these shifts, the Government of India introduced the National Education Policy (NEP) 2020, aiming to overhaul a system that has long struggled with fragmentation, rigid disciplinary silos, and regulatory inefficiencies.

This paper provides a detailed analysis of the current statistical landscape of Indian higher education and evaluates the NEP 2020’s strategies for institutional restructuring, curricular flexibility, and regulatory reform. By synthesizing empirical data from the AISHE 2021-22 report with the policy mandates of NEP 2020, the research identifies critical implementation hurdles—such as the digital divide and financing gaps—and outlines the necessary path forward to transform India into a global knowledge superpower by 2047.

## **2. Higher Education at a Glance: Statistical Landscape**

India manages one of the most expansive and complex higher education networks globally.

*i. Institutional Framework:* According to the All India Survey on Higher Education (AISHE) 2021-22, the institutional framework comprises 1,168 Universities, 45,473 Colleges, and 12,002 Stand-Alone Institutions [AISHE 2021-22]. The institutional framework has expanded significantly in recent years, with 341 universities established since 2014-15 and an increase of nearly 7,000 registered colleges during the same period [AISHE 2021-22].

*ii. The management profile:* The management profile of these institutions reveals a dual system of public and private participation. While 58.6% of universities are government-managed, they cater to the lion’s share of students, accounting for 73.7% of total enrollment [AISHE 2021-22]. Conversely, the college sector is heavily privatized; of the responding colleges, 65.3% are private un-aided, yet they only account for 44.6% of total

enrollment, suggesting that public institutions remain the primary vehicles for mass education [AISHE 2021-22].

**iii. Student Enrollment and Demographics:** Total enrollment in higher education has reached an estimated 4.33 crore, representing a 26.5% increase since 2014-15 [AISHE 2021-22]. A notable success in the recent decade is the surge in female participation. Female enrollment has shown particularly robust growth, reaching 2.07 crore students, which accounts for nearly 48% of the total student population [AISHE 2021-22]. The diversity of the student body is also reflected in the enrollment of social groups: Scheduled Castes (SC) make up 15.3%, Scheduled Tribes (ST) 6.3%, and Other Backward Classes (OBC) 37.8% of the total population [AISHE 2021-22]. Notably, the national Gross Enrollment Ratio (GER) stands at 28.4, and the female GER of 28.5 has consistently outperformed the male GER for five consecutive years [AISHE 2021-22]. Despite this progress, geographical concentration remains a concern, as six states—Uttar Pradesh, Maharashtra, Tamil Nadu, Madhya Pradesh, West Bengal, and Rajasthan—collectively house 53.3% of all students [AISHE 2021-22].

**iv. Academic Trends:** The system remains predominantly focused on undergraduate studies, which comprise 78.9% of total enrollment while postgraduate studies account for 12.1% [AISHE 2021-22]. At this level, the Arts discipline is the most popular, attracting 34.2% of students, followed by Science (14.8%) and Commerce (13.3%) [AISHE 2021-22]. Research, though a smaller segment is growing rapidly; Ph.D. enrollment has surged by 81.2% since 2014-15, signaling a strengthening research culture [AISHE 2021-22]. Supporting this vast student body is a faculty of 15.98 lakh teachers, resulting in a national Pupil-Teacher Ratio (PTR) of 24 for regular mode education [AISHE 2021-22].

### 3. Current Challenges in Higher Education in India

Despite the numerical growth, the Indian higher education system faces deep-rooted systemic issues that impede its ability to foster holistic development.

**i. Severely Fragmented Higher Educational Ecosystem:** The primary challenge is a severely fragmented higher educational ecosystem, where thousands of small, single-stream colleges operate in isolation, lacking the resources and scholarly community necessary for excellence [NEP 2020]. AISHE 2021-22 data confirms this fragmentation, noting that 35.2% of colleges have an enrollment of fewer than 200 students, making them operationally and economically suboptimal [AISHE 2021-22]. Data from the 2021-22 academic session indicates that while there are over 45,000 colleges, the distribution is highly uneven, with nearly 11% of all colleges

concentrated in just 10 districts, leading to significant geographical disparities in accessibility [AISHE 2021-22].

**ii. Rigidity and Pedagogy:** A persistent structural hurdle is the rigid separation of disciplines. Students are often forced into narrow specializations too early, which prevent the development of multidisciplinary abilities required by the modern knowledge landscape [NEP 2020]. Furthermore, there is a marked lack of emphasis on higher-order cognitive skills. Current teaching methods often prioritize rote learning over critical thinking and problem-solving, creating a gap between academic credentials and employability [NEP 2020].

**iii. Accessibility and Equity:** Geographical disparities and linguistic barriers continue to limit access. College density varies wildly; for example, Karnataka has 66 colleges per lakh population, while Bihar has only 7 [AISHE 2021-22]. Furthermore, the lack of Higher Education Institutions (HEIs) teaching in local or Indian languages effectively excludes a large section of the rural and socio-economically disadvantaged population [NEP 2020]. Enrollment patterns further reveal persistent challenges regarding equity and inclusion. Although the national Gross Enrolment Ratio has reached 28.4, there remains a substantial gap between social groups. While enrollment for SC and ST students has increased, their GER (25.9 and 21.2 respectively) remains below the national average, highlighting persistent equity gaps [AISHE 2021-22].

**iv. Research and Governance:** The research ecosystem is hampered by a chronic lack of investment. India spends only 0.69% of its GDP on research and innovation, a figure significantly lower than that of other major knowledge economies like the USA (2.8%) or South Korea (4.2%) [NEP 2020]. This financial deficit is exacerbated by a heavy-handed yet ineffective regulatory system [NEP 2020]. Historically, concentrations of power within bodies like the UGC and AICTE have led to conflicts of interest, where the same entities handled regulation, funding, and academic standards, and ultimately stifling institutional autonomy [NEP 2020]. This financial deficit, combined with a heavy-handed yet ineffective regulatory system that creates conflicts of interest by centralizing power, has historically prevented Indian institutions from achieving their full potential in knowledge creation [NEP 2020]. Furthermore, institutional leadership and faculty motivation are hampered by suboptimal governance and a lack of merit-based career progression mechanisms, which stifles the internal culture of excellence required for global competitiveness [NEP 2020].

**v. Infrastructure:** Infrastructure also remains an area of concern; while most institutions provide basic library and laboratory facilities, critical

modernizing elements like Integrated Quality Assurance Cells (IQAC) are present in only 68% of universities and a mere 31% of colleges [AISHE 2021-22].

#### 4. NEP 2020—Addressing the Challenges

The National Education Policy (NEP) 2020 proposes a comprehensive re-energizing of the higher education sector through deep structural and regulatory reforms designed to eliminate silos and foster innovation.

*i. Large, multidisciplinary universities and HEI clusters:* The central pillar of the reform is the transition toward large, multidisciplinary universities and HEI clusters, each aiming to house 3,000 or more students [NEP 2020]. By 2040, the policy envisions that all HEIs will become multidisciplinary, ending the isolation of single-stream institutions [NEP 2020].

*ii. Consolidation and Autonomy:* The policy mandates the phasing out of the “affiliated college” system over fifteen years [NEP 2020]. This will be achieved through a system of graded accreditation, whereby colleges are mentored to eventually become autonomous degree-granting institutions or constituent parts of a university [NEP 2020]. This shift is designed to empower institutions with the autonomy to innovate in curriculum and pedagogy while being held accountable through public self-disclosure [NEP 2020].

*iii. Curricular Flexibility and Research:* To address disciplinary rigidity, the NEP introduces imaginative curricular structures. This includes four-year undergraduate programs with multiple entry and exit points, allowing students to earn certificates, diplomas, or degrees based on their duration of study [NEP 2020]. To support this flexibility, an Academic Bank of Credit (ABC) will digitally store credits earned from various HEIs, enabling students to seamlessly integrate their learning across different institutions [NEP 2020]. Furthermore, to catalyze research, the policy establishes the National Research Foundation (NRF), which will provide merit-based peer-reviewed funding across all disciplines, specifically targeting the seeding of research capacity in state universities [NEP 2020].

*iv. Regulatory Transformation:* The regulatory architecture will be overhauled through the creation of the Higher Education Commission of India (HECI) [NEP 2020]. The HECI will function through four independent verticals to eliminate conflicts of interest:

*a. National Higher Education Regulatory Council (NHERC):* For single-point regulation.

*b. National Accreditation Council (NAC):* For a “meta-accrediting” ecosystem.

*c. Higher Education Grants Council (HEGC):* For transparent, performance-based funding.

*d. General Education Council (GEC):* For setting academic standards and defining “graduate attributes” [NEP 2020].

This “light but tight” approach aims to regulate essential matters like financial probity and public disclosure while leaving academic matters to the institutions [NEP 2020].

## 5. Critique of NEP 2020: Implementation Hurdles and Gaps

While the NEP 2020 offers an ambitious blueprint for reform, the sources highlight several potential pitfalls and implementation hurdles that may challenge its success.

*i. Financial Requirement:* The most daunting obstacle is the financial requirement. The policy reiterates the long-standing goal of increasing public investment in education to 6% of GDP, a target that has remained unfulfilled since the 1968 policy [NEP 2020]. AISHE 2021-22 data shows that while enrollment is growing, only 58.6% of universities are government-managed, yet they bear 73.7% of the enrollment load [AISHE 2021-22]. Without a massive infusion of state funds, public institutions may struggle to upgrade infrastructure to meet multidisciplinary standards.

*ii. The Digital Divide and Pedagogy:* The policy places a heavy emphasis on online and digital education as a tool for increasing access and achieving a 50% GER [NEP 2020]. However, it acknowledges that a “digital divide” persists, with a substantial section of the population lacking affordable computing devices and high-speed internet [NEP 2020]. Furthermore, the policy notes that a good classroom teacher is not automatically an effective online educator, necessitating a massive and rigorous teacher training effort that the current system may not have the immediate capacity to deliver [NEP 2020].

*iii. Logistical Complexity:* Transitioning thousands of small colleges into large multidisciplinary clusters is a logistical challenge of unprecedented scale. AISHE data indicates there are over 45,000 colleges, many of which are rural and specialized in single streams like Teacher Education (8.7%) or Nursing (4.3%) [AISHE 2021-22]. Integrating these diverse entities into a coherent multidisciplinary framework while maintaining geographic accessibility is operationally complex [NEP 2020]. AISHE 2021-22 data illustrates the scale of this problem, noting that 35.2% of colleges currently have an enrollment of fewer than 200 students, making them economically suboptimal for the multidisciplinary transition [AISHE 2021-22].

*iv. Unintended Commercialization:* There is also a risk of unintended commercialization; while the policy mandates “not-for-profit” status, the shift toward a “light but tight” regulatory model must be robust enough to prevent for-profit entities from exploiting parents through arbitrary fee increases [NEP 2020].

## **6. Path Forward for Higher Education: The Road to Viksit Bharat 2047**

The successful transformation of the Indian higher education system requires a long-term, synchronized effort from multiple stakeholders and a steadfast commitment to its core principles.

*i. Multidisciplinary Institutions:* The policy sets a target for 2040, by which time all HEIs should aim to become multidisciplinary institutions with large student enrollments to ensure resource efficiency [NEP 2020]. A key milestone in this path is the year 2030, by which time at least one large multidisciplinary HEI must be established in or near every district to ensure equitable access [NEP 2020].

*ii. Increasing the GER:* The path forward is guided by the objective of increasing the GER to 50% by 2035. Achieving a 50% Gross Enrolment Ratio by 2035 is the quantitative benchmark that will signal India’s readiness for developed-nation status by 2047 [NEP 2020]. To achieve this, the policy mandates that by 2030, at least one large multidisciplinary HEI must be established in or near every district [NEP 2020].

*iii. Empowering Institutional Leadership:* Governance must move away from external interference toward independent Boards of Governors (BoG) [NEP 2020]. These boards, consisting of qualified and committed individuals, will be responsible for institutional development, merit-based appointments, and financial probity [NEP 2020]. On an institutional level, the primary mechanism for growth will be the Institutional Development Plan (IDP) [NEP 2020]. Each HEI will prepare an IDP to assess its progress, develop initiatives for holistic student development, and reach goals for accreditation and autonomy [NEP 2020]. These plans will also serve as the basis for public funding; ensuring that resources are tied to measurable improvements [NEP 2020]. This institutional autonomy must be balanced by a “single window” for scholarships and financial support to ensure that students from socio-economically disadvantaged groups (SEDGs) are not left behind [NEP 2020].

*iv. Continuously Review Mechanism:* Execution will be led by the newly re-designated Ministry of Education (MoE) in close collaboration with a strengthened Central Advisory Board of Education (CABE), which will be responsible for continuously reviewing and articulating the vision of education [NEP 2020].

**v. Linguistic Inclusion and Technology:** To bridge the equity gap, the path forward includes a concerted effort to promote Indian languages as mediums of instruction [NEP 2020]. This will be supported by the creation of the Indian Institute of Translation and Interpretation (IITI) and the development of high-quality bilingual textbooks [NEP 2020]. Finally, the National Educational Technology Forum (NETF) will provide a platform for the strategic induction of technology, ensuring that digital tools enhance rather than hinder the learning experience [NEP 2020].

**vi. Teacher Education and Internationalization:** A critical step in the path forward is the professionalization of faculty. By 2030, teacher education will be moved into multidisciplinary colleges, and the minimum degree for teaching will be a 4-year integrated B.Ed. [NEP 2020]. Simultaneously, India aims to restore its role as a “Vishwa Guru” by internationalizing its higher education [NEP 2020]. Finally, the path forward includes an international dimension, promoting India as a global study destination and facilitating collaborations with top-tier foreign universities to achieve “internationalization at home” [NEP 2020].

## **7. Conclusion**

The revolutionizing of Indian higher education is not merely a policy objective but a national imperative for achieving Viksit Bharat 2047. As this analysis demonstrates, the current system—while expansive—is hindered by historical fragmentation and a lack of research depth [AISHE 2021-22, NEP 2020]. The National Education Policy 2020 provides the necessary structural and regulatory roadmap to transition from this state of isolation to a vibrant ecosystem of multidisciplinary knowledge hubs [NEP 2020]. By integrating the Humanities and Arts with STEM disciplines and catalyzing research through the NRF, India can develop the 21st-century capabilities required for the fourth industrial revolution [NEP 2020].

However, the transition is fraught with critical implementation risks, particularly regarding universal digital access and the fulfillment of the 6% GDP investment commitment [NEP 2020]. The success of these reforms will depend on the autonomy of institutional leadership and the professionalization of the teaching workforce through the 4-year integrated B.Ed. degree by 2030 [NEP 2020]. Ultimately, by creating an education system that is “second to none” by 2040, India will secure its path toward becoming a developed knowledge superpower by the centenary of its independence in 2047 [NEP 2020].

## **8. Implications of the Study**

The challenges and proposed reforms in India’s higher education system carry significant implications for policymakers, educators, and institutions.

**i. Policy Reform:** The study underscores the need for continuous monitoring and adaptation of NEP 2020 policies. While the policy aims to address systemic inequalities, its success depends heavily on effective implementation at the state and institutional levels. Policymakers should consider regional variations and tailor reforms to suit local contexts. Additionally, focused efforts on infrastructure development in underserved areas and increased funding for research are essential for realizing the goals of NEP 2020.

**ii. Educational Institutions:** Institutions must prioritize faculty development, curriculum updates, and fostering industry-academia collaboration to address the growing skills gap. Emphasis on multidisciplinary learning and research innovation is critical to improving the quality of education and enhancing global competitiveness. Public and private institutions should align their missions with the broader national goals of accessibility, equity, and quality.

**iii. Industry Collaboration:** The findings highlight the gap between academic outcomes and industry expectations. Universities and industries must work together to bridge this divide through internships, skill development programs, and joint research initiatives. This collaboration is particularly important in fields where innovation and technical skills are crucial.

## **9. Future Research**

Further research should focus on evaluating the implementation outcomes of NEP 2020, particularly regarding its impact on marginalized communities, rural students, and women in higher education. Additionally, longitudinal studies on employability post-graduation and the effectiveness of industry-academia collaborations could provide more concrete insights into the evolving relationship between higher education and the labor market.

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# Viksit Bharat 2047 and Challenges to India's Strategic Security: Implications and Imperatives

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## **Abstract**

The Government of India's vision of *Viksit Bharat 2047* aims to transform the nation into a fully developed, economically prosperous, and technologically advanced global power by the centenary of its independence. However, the realization of a \$30–\$40 trillion economy and a highly developed social infrastructure is inextricably linked to the nation's ability to secure its strategic environment. This paper examines the evolving national security landscape of India leading up to 2047, analysing traditional continental and maritime threats alongside emerging multi-domain challenges, including artificial intelligence (AI), cyber warfare, and resource weaponization. Drawing upon the recently unveiled *Defence Forces Vision 2047: A Roadmap for a Future-Ready Indian Military*, this article assesses the strategic implications of regional turbulence, great-power competition, and technological disruption. Finally, it proposes actionable strategic imperatives, ranging from military-industry-academia fusion to cognitive security frameworks, necessary to safeguard India's developmental trajectory and strategic autonomy.

**Keywords:** Viksit Bharat 2047, Strategic Security, Foreign Policy, Grand Strategy, Geopolitics.

## **I. Introduction: The Security-Development Nexus**

The Government of India's centenary vision, *Viksit Bharat 2047* (Developed India 2047), represents a watershed paradigm shift in the nation's grand strategy. Moving decisively beyond the conventional metrics of incremental Gross Domestic Product (GDP) growth, the vision encapsulates a holistic transformation aimed at achieving a \$30–\$40 trillion economy, universalizing a high Human Development Index (HDI), establishing technological sovereignty, and attaining global leadership in critical industries<sup>1</sup>. However, historical precedents in international relations invariably demonstrate that unprecedented economic ascension alters the

regional and global balance of power, thereby precipitating strategic friction<sup>2</sup>. The realization of *Viksit Bharat* is, therefore, inextricably bound to the state's capacity to secure its expanding strategic, economic, and technological horizons.

### **1.1 Theoretical Underpinnings of the Nexus**

The theoretical foundation of this paper rests upon the "Security-Development Nexus," a conceptual framework positing that security and development are mutually reinforcing and fundamentally inseparable imperatives<sup>3</sup>. In contemporary strategic studies, the traditional, Westphalian concept of security, strictly defined by military defence of territorial integrity, has proven fundamentally inadequate<sup>4</sup>. Today, a state's vulnerability is equally dictated by its integration into volatile global supply chains, its reliance on digital infrastructure, and its exposure to geoeconomic coercion<sup>5</sup>.

Conversely, sustainable economic development cannot be incubated in a vacuum of strategic vulnerability. As articulated by structural realists, an emerging power's economic vitality acts as a magnet for external balancing and containment strategies by rival actors<sup>6</sup>. Thus, for India, securing the developmental trajectory toward 2047 requires translating economic wealth into Comprehensive National Power (CNP) i.e., a synthesis of military deterrence, diplomatic agility, and technological self-reliance<sup>7</sup>.

### **1.2 The Inevitability of Strategic Friction**

As India transitions from a regional balancer to a systemic pole in the multipolar global order, its threat matrix is simultaneously expanding and diversifying. The pursuit of a high-tech, industrialized economy naturally extends India's strategic frontiers far beyond its immediate continental borders. Energy security demands unhindered access to the global commons, particularly the sea lines of communication (SLOCs) traversing the Indo-Pacific. Technological advancement necessitates the secure procurement of critical minerals and semiconductors, embedding India in deeply contested geoeconomic fault lines. Simultaneously, India's immediate neighbourhood remains characterized by protracted territorial disputes, state-sponsored asymmetric warfare, and the expanding footprint of adversarial powers seeking to establish an Anti-Access/Area Denial (A2/AD) perimeter around the Indian subcontinent. The friction generated by India's rise ensures that the journey to 2047 will not be a peaceful linear progression, but a deeply contested manoeuvring through a hostile geopolitical landscape.

### **1.3 Navigating the Era of Multi-Domain Disruption**

Complicating this traditional security dilemma is the rapid onset of the Fourth Industrial Revolution. The domains of modern statecraft and

warfare have structurally expanded. The kinetic battlefields of land, sea, and air are now inexorably fused with the non-kinetic, boundless arenas of cyberspace, outer space, and the cognitive domain. For a highly digitized economy envisioned under *Viksit Bharat*, cyber-sabotage of critical infrastructure, the weaponization of artificial intelligence (AI), and systematic disinformation campaigns pose existential threats that conventional military platforms are ill-equipped to deter.

Safeguarding the *Viksit Bharat* vision, therefore, necessitates transitioning from a reactive, platform-centric security posture to a proactive, multi-domain deterrence framework. The traditional “guns versus butter” debate is rendered obsolete; investing in indigenous technological ecosystems and agile defence capabilities is now a direct investment in the nation’s economic survivability. It is against this backdrop: this paper investigates the evolving national security landscape of India leading up to its independence centenary.

## 2. The Geopolitical and Regional Security Landscape

As India accelerates its trajectory toward the *Viksit Bharat 2047* milestones, its strategic geography places it at the epicentre of acute geopolitical turbulence. The regional security environment is characterized by a complex amalgamation of unresolved territorial disputes, Gray-zone coercion, and the rapid militarization of the global commons. For India, the primary security dilemma is dual-fronted: mitigating the immediate continental friction along its northern and western borders while simultaneously securing its expanding maritime interests in the Indian Ocean Region (IOR).

### 2.1 The Continental Dilemma: A “Stable but Abnormal” Frontier

The Line of Actual Control (LAC) remains the most volatile flashpoint in India’s immediate strategic calculus. While diplomatic and military dialogues facilitated the disengagement of troops in the Depsang and Demchok sectors by late 2024 and early 2025, the overarching situation has been accurately categorized by India’s military leadership as “stable, but sensitive and abnormal”<sup>12</sup>. The fundamental trust deficit between New Delhi and Beijing persists, effectively transforming the LAC into a heavily militarized, contested frontier rather than a peaceful boundary<sup>13</sup>.

The threat matrix along the LAC has structurally evolved. Adversarial strategies have shifted from localized incursions to a broader Anti-Access/Area Denial (A2/AD) posture. Notably, recent satellite intelligence confirms the rapid development of “airbase clusters” in Tibet and Xinjiang (specifically in Tingri, Lhunze, and Burang). These facilities, equipped with hardened shelters and drone-operation logistics, are situated mere kilometres from

the LAC<sup>14</sup>. This infrastructural surge directly erodes the historical terrain advantage previously held by the Indian Air Force (IAF), demanding perpetual high-altitude combat readiness and rapid infrastructural counter-mobilization under India's *Vibrant Villages Programme*<sup>15</sup>.

## 2.2 Proxy Warfare and the Two-Front Conundrum

India's continental security is further complicated by the enduring collusive threat posed by the China-Pakistan axis, often termed the "Two-Front Conundrum"<sup>16</sup>. The western frontier remains actively volatile due to the sustained deployment of state-sponsored non-state actors. The structural integration of asymmetric warfare into the grand strategy of adversarial neighbours ensures that low-intensity proxy conflicts remain a persistent drain on India's internal security apparatus.

Furthermore, regional instability on India's eastern flank which is exacerbated by civil unrest in Myanmar and political recalibrations in Bangladesh does introduces new vectors of transnational spillover. These localized conflicts threaten vital connectivity corridors critical to India's "Act East" policy, highlighting the necessity for robust border management frameworks that transcend traditional military guarding to encompass comprehensive demographic and socioeconomic security<sup>17</sup>.

## 2.3 The Maritime Domain: The Evolution from SAGAR to MAHASAGAR

The realization of a \$30–\$40 trillion economy is fundamentally predicated on uninterrupted access to the sea lines of communication (SLOCs). Consequently, India's maritime strategy has undergone a profound doctrinal evolution. Moving beyond the 2015 SAGAR (Security and Growth for All in the Region) doctrine, New Delhi has recently institutionalized the *MAHASAGAR* (Mutual and Holistic Advancement for Security and Growth Across Regions) framework<sup>18</sup>. This strategic pivot reflects a critical normative shift: India is transitioning from projecting itself merely as a "Net Security Provider" which risked reinforcing a patron-client dynamic with smaller littoral states, to positioning itself as the "Preferred Security Partner" and "First Responder" across the IOR<sup>19</sup>.

The urgency of this shift is driven by the expanding footprint of the People's Liberation Army Navy (PLAN). Beyond the militarization of the Djibouti base and port access in Gwadar and Hambantota, the IOR has witnessed a surge in the deployment of dual-use Chinese research and hydrographic vessels (e.g., *Lan Hai 101*, *Shi Yan 6*). These vessels systematically map deep-sea data critical for future submarine deployments, presenting a severe challenge to India's maritime domain awareness (MDA)<sup>20</sup>.

To counter this maritime encirclement, India has accelerated its naval diplomacy and modernization. The convergence of the International Fleet Review (IFR), Exercise MILAN, and the Indian Ocean Naval Symposium (IONS) in Visakhapatnam in early 2026 underscores India's intent to consolidate a rules-based maritime order through unilateral coalitions and strategic burden-sharing with partners like the US, France, and the EU.

### **2.4 Multipolarity and Strategic Autonomy**

Ultimately, securing the *Viksit Bharat* vision requires navigating a fractured global order defined by great-power competition. As transactional power dynamics replace established international norms, India must rigorously operationalize its strategic autonomy. This entails balancing deep technological and defence partnerships with Western coalitions (such as the Quad and iCET) while maintaining the diplomatic agility to protect its energy security and continental interests. In this multipolar reality, India's regional security cannot be outsourced, nor can these security constructs be borrowed; it must be anchored in *Aatmanirbharta* (self-reliance) in defence manufacturing and multi-domain deterrence.

## **3. Emerging Domains of Conflict: Cyber, Space, and AI**

The strategic pursuit of *Viksit Bharat 2047* is intrinsically tied to India's successful transition into a highly digitized, knowledge-based economy. However, the Fourth Industrial Revolution (4IR) has fundamentally altered the character of warfare, precipitating a structural shift from geography-bound, platform-centric conflicts to borderless, Multi-Domain Operations (MDO). The kinetic battlefields of land, sea, and air are now inextricably fused with the non-kinetic domains of cyberspace, outer space, and human cognition. In this paradigm, technological superiority does not merely support military operations; it is the primary vector of deterrence and coercion<sup>21</sup>. For India, securing these emerging domains is no longer a peripheral defence objective but the central strategic imperative of its grand strategy.

### **3.1 Cyberspace: The Vulnerability of Digital Public Infrastructure**

India's economic ascension is heavily reliant on the proliferation of its Digital Public Infrastructure (DPI), including systems like the Unified Payments Interface (UPI), Aadhaar-based frameworks, and the transition toward smart energy grids. While this digitalization accelerates economic formalization, it simultaneously creates an expansive attack surface for state and non-state actors.

Cyberspace has emerged as the primary arena for "gray-zone" conflict i.e., actions that remain below the threshold of conventional armed conflict but achieve strategic degradation<sup>22</sup>. Advanced Persistent Threats (APTs), often orchestrated by state-sponsored syndicates, increasingly target India's

critical national infrastructure (CNI). The strategic objective of these cyber operations is not direct military defeat, but socio-economic paralysis. A coordinated cyber-sabotage campaign targeting financial hubs, power distribution networks, or healthcare data repositories could severely derail the economic momentum required to achieve the \$30 trillion GDP target. Consequently, India must evolve from a posture of cyber resilience to one of active cyber deterrence, requiring seamless integration between the Defence Cyber Agency (DCyA), civilian cybersecurity nodal bodies (such as CERT-In), and private sector telecom providers<sup>23</sup>.

### **3.2 The Weaponization of Outer Space**

The militarization of outer space represents a critical vulnerability for India's strategic autonomy. Modern military operations, from precision-guided munitions to Intelligence, Surveillance, and Reconnaissance (ISR), are fundamentally dependent on space-based assets. As India expands its satellite constellations, including the regional navigation system NavIC, securing these orbital assets is paramount.

Space is increasingly contested, congested, and competitive. Adversarial powers have rapidly operationalized counter-space capabilities, including Direct-Ascent Anti-Satellite (DA-ASAT) missiles, co-orbital jammers, and directed-energy weapons designed to blind or permanently disable enemy satellites<sup>24</sup>. The destruction or spoofing of Indian satellite networks would effectively "blind" the terrestrial armed forces, paralyzing communication and early-warning systems. Although India demonstrated its kinetic ASAT capability in 2019 (Mission Shakti), a comprehensive space deterrence strategy requires the development of non-kinetic, reversible counter-space measures and the hardening of orbital infrastructure under the aegis of the Defence Space Agency (DSA)<sup>25</sup>.

### **3.3 Artificial Intelligence and Lethal Autonomous Weapons Systems**

Artificial Intelligence (AI) is the apex catalyst in contemporary strategic affairs, promising to compress the OODA (Observe, Orient, Decide, Act) loop to speeds beyond human cognitive capacity. The integration of AI into military logistics, predictive maintenance, and strategic wargaming offers immense force-multiplier effects. However, it also introduces acute systemic risks.

The proliferation of Lethal Autonomous Weapons Systems (LAWS) and AI-driven drone swarms allows both peer competitors and asymmetric actors to challenge conventional military dominance. Drone swarms, capable of synchronized, autonomous decision-making, can oversaturate traditional air defence systems, rendering legacy platforms highly vulnerable<sup>26</sup>. Furthermore, "algorithmic warfare" introduces the risk of "flash conflicts"

because of unintended, rapid escalations triggered by competing machine-learning algorithms misinterpreting adversary signals in high-stress environments, bypassing human strategic deliberation<sup>27</sup>.

### **3.4 Cognitive Warfare and the Erosion of Social Cohesion**

Perhaps the most insidious threat to *Viksit Bharat* lies in the cognitive domain. Cognitive warfare weaponizes the information environment to hack the human mind, manipulating public perception to sow internal discord without firing a single shot<sup>28</sup>. Adversaries are increasingly deploying generative AI, highly sophisticated deepfakes, and automated bot networks to launch targeted disinformation campaigns<sup>29</sup>. In a diverse, multi-ethnic, and democratic society like India, such campaigns are strategically designed to exploit existing societal fault lines, incite civil unrest, and erode public trust in democratic institutions and the electoral process. By paralyzing the state's internal sociopolitical cohesion, cognitive warfare directly undermines the stable governance required for sustained foreign direct investment and economic growth. Securing the cognitive domain requires a "whole-of-society" approach, combining algorithmic fact-checking, stringent regulatory frameworks for social media intermediaries, and widespread digital literacy campaigns.

## **4. Economic and Resource Security Challenges**

The realization of *Viksit Bharat 2047* requires a fundamental restructuring of India's economic base, transitioning from service-led growth to high-tech, advanced manufacturing. However, as global commerce becomes increasingly securitized, economic interdependence has been weaponized. The "weaponization of supply chains" presents a profound strategic vulnerability for India. The transition toward a green economy and the indigenization of defence platforms dictate that national security is no longer merely about territorial integrity, but about the resilience of industrial supply lines and access to critical technologies<sup>30</sup>.

### **4.1 The Geoeconomics of the Green Transition: Critical Minerals Dependency**

The foundation of the Fourth Industrial Revolution, encompassing artificial intelligence hardware, electric vehicle (EV) mobility, aerospace capabilities, and renewable energy grids, is built upon critical minerals and rare earth elements (REEs). Minerals such as lithium, cobalt, titanium, and dysprosium are indispensable for the manufacturing of high-performance batteries, radar systems, and Rare Earth Permanent Magnets (REPMs) used in fighter aircraft and wind turbines.

Presently, the global supply chain for these elements suffers from extreme geographic concentration. With adversarial nations controlling nearly 60%

of rare earth processing and over 70% of global lithium refining, India faces acute strategic vulnerability<sup>31</sup>. A coordinated export restriction or embargo on these materials could paralyze both India's clean energy transition and its defence industrial base.

To mitigate this, India has executed a paradigm shift in resource statecraft. The operationalization of the **National Critical Mineral Mission (NCMM)**, backed by a ₹ 34,000 crore sovereign fund, mandates aggressive domestic exploration and the strategic acquisition of overseas mineral assets through diaspora-linked and state-backed ventures<sup>32</sup>. Furthermore, the Union Budget 2026–27 announced the creation of “Dedicated Rare Earth Corridors” in states like Odisha and Kerala, complemented by a ₹ 7,280 crore incentive scheme to establish a fully integrated domestic REPM manufacturing ecosystem, signalling a definitive move toward resource sovereignty<sup>33</sup>.

#### **4.2 Supply Chain Weaponization and the Semiconductor Chokepoint**

If critical minerals are the raw materials of the modern economy, semiconductors are its central nervous system. Modern military platforms, from precision-guided munitions and drone swarms to encrypted communication networks, are heavily dependent on advanced-node semiconductors.

The global semiconductor supply chain is structurally predisposed to systemic shocks due to its immense complexity and geographic fragility. Advanced-node fabrication is hyper-concentrated in Taiwan and South Korea, while critical intellectual property (IP), electronic design automation (EDA) software, and extreme ultraviolet (EUV) lithography equipment are controlled by a handful of Western and Japanese monopolies<sup>34</sup>. This concentration renders the supply chain highly susceptible to geopolitical blockades, export controls, and regional conflicts in the Indo-Pacific.

Recognizing this existential chokepoint, India's grand strategy has pivoted from import reliance to capacity building. The recent launch of the **India Semiconductor Mission (ISM) 2.0** in early 2026 marks a maturation in policy. Moving beyond the initial focus on Out-Sourced Assembly and Test (OSAT) facilities, ISM 2.0 explicitly targets supply chain resilience by incentivizing the domestic production of semiconductor manufacturing equipment, specialty chemicals, and full-stack indigenous Indian IP<sup>35</sup>. Achieving a robust, “design-to-fabrication” semiconductor ecosystem is arguably the most critical prerequisite for maintaining strategic autonomy in the 21st century.

#### **4.3 Strategic Trade Architecture and Minilateral Coalitions**

India's economic security strategy acknowledges that absolute autarky

is impossible in a hyper-globalized technology ecosystem. Therefore, New Delhi is actively reshaping the global resource architecture by substituting vulnerable, single-source dependencies with “friend-shoring” initiatives and strategic minilateralism.

This is prominently reflected in India’s recent diplomatic manoeuvring. The anticipated finalization of the US-India Critical Minerals Agreement in early 2026 establishes a bilateral framework to secure supply chains for advanced manufacturing, bypassing volatile markets<sup>36</sup>. Concurrently, India’s strategic integration into the US-led **Pax Silica** initiative, a multinational coalition encompassing Australia, Japan, and the UK, aims to construct end-to-end, secure supply chains for semiconductors and artificial intelligence inputs<sup>37</sup>. By embedding its economic security within a network of allied powers, India leverages collective deterrence against geoeconomic coercion, ensuring the uninterrupted material and technological flow required to sustain the *Viksit Bharat* trajectory.

## 5. ‘Defence Forces Vision 2047’: A Framework for Transformation

The escalating complexities of the regional threat matrix and the rapid integration of disruptive technologies necessitated a systemic overhaul of India’s military architecture. Recognizing that marginal, incremental upgrades are insufficient to secure a \$30 trillion economy, the Ministry of Defence released the *Defence Forces Vision 2047: A Roadmap for a Future-Ready Indian Military* in March 2026<sup>38</sup>. This seminal doctrinal blueprint is designed to transition the Armed Forces from a platform-centric, siloed structure into an agile, integrated, and technology-driven instrument of national power. Building upon the foundational designation of 2025 as the “Year of Reforms”, the Vision 2047 roadmap is structured around three core pillars: multi-domain technological dominance, structural jointness, and deep indigenization<sup>39</sup>.

### 5.1 The Doctrinal Shift: Multi-Domain and Cognitive Readiness

A defining feature of the Vision 2047 framework is its explicit acknowledgment that future conflicts will transcend the traditional kinetic air-land-sea triad. The document mandates the creation of highly specialized, domain-specific military divisions to counteract asymmetrical, hybrid, and algorithmic threats. Notably, it operationalizes a dedicated **Drone Force**, a **Data Force**, and a **Cognitive Warfare Action Force**, alongside the establishment of a Defence Geo-Spatial Agency<sup>40</sup>.

Furthermore, the roadmap accelerates the deployment of **Mission Sudarshan Chakra**, a comprehensive national air and missile defence shield

that integrates indigenous interceptors to secure the continental airspace against hypersonic glides and autonomous drone swarm saturations. By officially elevating space and cyberspace to full-fledged operational commands, the Vision 2047 ensures that electronic warfare (EW) and offensive cyber-operations are no longer relegated to supportive functions but act as primary vectors of India's deterrence strategy.

## **5.2 Institutionalizing Jointness: The Transition to Integrated Theatre Commands**

Historically, the operational efficacy of the Indian military was occasionally hindered by inter-service compartmentalization and parallel procurement tracks among the Army, Navy, and Air Force. The transition from mere cooperation to a unified chain of command materialized with the landmark June 2025 reforms, which structurally empowered the Chief of Defence Staff (CDS) to issue binding, single-point Joint Instructions and Orders across all three services<sup>41</sup>.

Building upon this administrative breakthrough, 2026 marks the operational rollout of India's Integrated Theatre Commands (ITCs). Transitioning from 17 disparate single-service commands, the military architecture is being rapidly reorganized into three adversary- and geography-specific theatres:

❖ **The Northern Theatre Command (NTC - Lucknow):** Tasked with managing the 3,488 km Line of Actual Control (LAC), optimizing high-altitude logistics, and deterring continental coercion from the north.

❖ **The Western Theatre Command (WTC - Jaipur):** Focused on managing the traditional conventional threat matrix and neutralizing state-sponsored proxy operations emanating from the western frontier.

❖ **The Maritime Theatre Command (MTC - Thiruvananthapuram):** Entrusted with securing the vast sea lines of communication (SLOCs) across the Indian Ocean Region (IOR) and countering adversarial maritime encirclement strategies<sup>42</sup>.

This "theaterisation" fundamentally alters the role of individual Service Chiefs, transitioning them from operational battlefield commanders to entities responsible strictly for "Raise-Train-Sustain" functions. This optimization of resource allocation drastically reduces response times during multidimensional crises, ensuring the military functions as a singular, cohesive combat organism.

## **5.3 Aatmanirbharta 2.0: Deep-Tech Indigenization and Export Resilience**

The strategic autonomy envisioned for 2047 cannot be guaranteed if the state remains tethered to vulnerable, foreign military supply chains.

Therefore, Vision 2047 seamlessly aligns with the *Aatmanirbharta* (self-reliance) imperative, fundamentally reshaping the defence industrial base. The introduction of the Defence Procurement Manual (DPM) 2025 systematically shifted the acquisition bias toward domestic intellectual property, mandating industry-friendly reforms that prioritize private-sector participation and transparency<sup>43</sup>.

The economic and strategic dividends of this policy pivot are already materializing. By the end of FY 2024–25, India recorded its highest-ever defence production of ₹ 1.54 lakh crore, simultaneously achieving a record export volume of approximately ₹ 24,000 crore<sup>44</sup>. Looking ahead, the state's strategic goal is to establish a production capacity of ₹ 3 lakh crore and an export target of ₹ 50,000 crore by 2029.

Crucially, to bypass the “middle-income technology trap,” the defence establishment has pivoted from merely assembling legacy hardware under licensed production to funding indigenous deep-tech innovation. Initiatives such as the ADITI (Acing Development of Innovative Technologies with iDEX) scheme and expanded Technology Development Funds (TDF) specifically target emerging private sector players and over 16,000 Micro, Small, and Medium Enterprises (MSMEs). By integrating these startups into the defence ecosystem, India is accelerating the in-house development of quantum computing, AI-driven swarm logic, advanced sensor arrays, and specialty aerospace alloys, moving decisively from import dependence to technological sovereignty.

## **6. Strategic Implications for India**

The convergence of systemic geopolitical volatility, rapid technological disruption, and weaponized economic interdependence fundamentally alters India's strategic calculus. As India scales toward a \$30–\$40 trillion economy by 2047, the traditional paradigms of national security, historically dominated by continental defence and nuclear deterrence, are no longer sufficient. The strategic implications of this transformed landscape dictate that India must radically recalibrate its deterrence posture, force projection capabilities, and grand strategy to survive and thrive in an era of persistent, multi-domain contestation.

### **6.1 The Paradigm Shift: From Conventional to Cross-Domain Deterrence**

Historically, India's deterrence strategy was predicated on conventional military asymmetry against Pakistan (e.g., the Proactive Strategy or “Cold Start” doctrine) and a defensive-denial posture against China, underpinned by a nuclear triad governed by a “No First Use” (NFU) policy<sup>45</sup>. However, the proliferation of cyber, space, and AI-driven capabilities implies that

adversaries can inflict strategic paralysis without ever crossing the threshold of conventional kinetic warfare.

The primary implication for India is the urgent necessity to transition to **Cross-Domain Deterrence (CDD)**. In a CDD framework, a vulnerability in one domain is offset by asymmetric capabilities in another. For instance, a state-sponsored cyberattack on India's financial infrastructure in Mumbai must be deterrable by India's demonstrable capacity to launch an offensive cyber-operation against the adversary's strategic nodes, or by executing a precision space-denial operation<sup>46</sup>. Deterrence by punishment is no longer confined to mechanized strike corps; it requires the seamless integration of kinetic and non-kinetic payloads. Consequently, the operationalization of the Integrated Theatre Commands (ITCs) must prioritize the fusion of electronic warfare (EW), cyber-offense, and cognitive operations into everyday tactical planning.

### **6.2 Navigating the "Gray Zone" and the Erosion of the Peace-War Binary**

The nuclear overhang in the Indian subcontinent has paradoxically made conventional, large-scale wars less likely, thereby incentivizing adversaries to operate extensively in the "gray zone." Gray-zone statecraft involves coercive actions that are aggressive and strategically consequential yet deliberately calibrated to remain below the threshold that would trigger a conventional military response<sup>47</sup>.

For India, this implies a perpetual state of sub-conventional conflict. On the continental front, this manifests as "salami-slicing" tactics, the construction of dual-use *Xiaokang* (moderately prosperous) border villages, and infrastructural encroachment along the Line of Actual Control (LAC)<sup>48</sup>. Internally, it takes the form of proxy terrorism, algorithmic disinformation campaigns, and the funding of radical separatist elements. India's strategic apparatus can no longer operate on a binary of "peacetime" and "wartime." The implication is that India must develop highly calibrated, proportionate, and scalable response mechanisms, such as the targeted economic decoupling utilized following the 2020 Galwan clashes, to impose unacceptable costs on gray-zone aggressors without triggering unintended escalation.

### **6.3 Rebalancing the Continental-Maritime Equation**

Perhaps the most profound strategic implication for a rising India is the tension between its immediate continental burdens and its long-term maritime destiny. The *Viksit Bharat* vision is inherently outward-looking, reliant on global supply chains, energy imports, and export-led manufacturing. Thus, India's economic centre of gravity lies in the Indo-Pacific and the unhindered navigation of the Sea Lines of Communication (SLOCs)<sup>49</sup>.

However, the enduring “Two-Front” threat actively tether India’s military resources to its northern and western land borders, creating a strategic “continental drag.” Adversaries strategically exploit this by escalating border tensions to force New Delhi into diverting budgetary resources away from naval modernization<sup>50</sup>.

The implication is that India must adopt a strategy of “**Continental Denial and Maritime Dominance.**” Along the LAC, India must rely on technology-intensive denial architectures (e.g., drone swarms, robust ISR, and agile mountain strike corps) to hold the line efficiently. Simultaneously, it must aggressively project power in the Indian Ocean Region (IOR). This requires capitalizing on India’s geographic advantages, specifically the weaponization and strategic fortification of the Andaman and Nicobar Islands, to establish an indigenous Anti-Access/Area Denial (A2/AD) bubble capable of choking adversarial maritime transit through the Malacca Strait in the event of a conflict<sup>51</sup>.

#### 6.4 Economic Security as the Ultimate Centre of Gravity

Ultimately, the journey to 2047 inextricably fuses economic policy with national security. The weaponization of supply chains dictates that reliance on adversarial nations for critical technologies (semiconductors, telecommunications) or transition minerals (lithium, rare earths) constitutes an unacceptable strategic vulnerability.

The implication for Indian policymakers is that *Aatmanirbharta* (self-reliance) cannot be viewed merely as an industrial protectionist measure; it is a core defence imperative. India must continuously leverage its demographic dividend and market size to negotiate favourable technology-transfer agreements through multilateral frameworks like the Quad and the EU-India Trade and Technology Council (TTC)<sup>52</sup>. Building resilient, redundant, and secure supply chains with allied democracies (“friend-shoring”) is the only viable mechanism to insulate the *Viksit Bharat* economic engine from geopolitical shocks.

#### 7. Strategic Imperatives for Policymakers

To neutralize the multi-domain threats mapped in the preceding sections and secure the *Viksit Bharat 2047* trajectory, Indian policymakers must transition from a posture of threat management to one of strategic pre-emption. The traditional siloes separating foreign policy, economic planning, and military strategy must be dismantled. The following strategic imperatives outline the actionable, “whole-of-nation” frameworks required to institutionalize comprehensive national security.

### **7.1 Accelerate Civil-Military-Academia Fusion (CMAF)**

The technological superiority required for 2047 cannot be generated within the isolated confines of the Defence Research and Development Organisation (DRDO) or Defense Public Sector Undertakings (DPSUs) alone. India must rapidly operationalize a robust Civil-Military-Academia Fusion (CMAF) model, drawing inspiration from the DARPA (Defense Advanced Research Projects Agency) framework but tailored to India's unique startup ecosystem<sup>53</sup>.

The government must establish a highly empowered, statutorily backed **National Defence Technology Council (NDTC)**. This body should be mandated to fund high-risk, high-reward deep-tech ventures in quantum cryptography, directed-energy weapons (DEWs), and biomaterials. Furthermore, policymakers must legally streamline the procurement process, allowing the armed forces to bypass traditional, multi-year bureaucratic acquisition cycles (the "LI" lowest-bidder trap) when acquiring critical, fast-evolving technologies from indigenous micro, small, and medium enterprises (MSMEs) and academic incubators<sup>54</sup>.

### **7.2 Establish a National Cognitive Security Architecture**

As the threat of AI-driven algorithmic manipulation and cognitive warfare escalates, defending the socio-political cohesion of the state is as vital as defending its physical borders. The current fragmented approach to combating disinformation, spread across various ministries and fact-checking units, is insufficient against state-sponsored, automated bot networks.

India must establish a centralized **National Cognitive Security Centre (NCSC)** under the aegis of the National Security Council Secretariat (NSCS). The NCSC's primary mandate should be to monitor, attribute, and neutralize sophisticated deepfakes and coordinated information operations in real-time<sup>55</sup>. This requires the development of sovereign AI models trained specifically to detect linguistic and cultural nuances in Indian vernacular languages, identifying adversarial narratives before they achieve viral velocity. Additionally, policymakers must introduce statutory regulations mandating digital platforms to embed highly visible, non-removable watermarks (such as SynthID) on all AI-generated content.

### **7.3 Secure Geo-Economic and Resource Sovereignty**

Economic security is the bedrock of strategic autonomy. To insulate the \$30 trillion economic vision from supply chain weaponization, India must implement a deeply proactive resource statecraft strategy. Firstly, the mandate of the newly formed National Critical Mineral Mission (NCMM) must be expanded to create a **Strategic Mineral Reserve**, mirroring the

nation's Strategic Petroleum Reserves<sup>56</sup>. This involves stockpiling 18–24 months' worth of critical rare earth elements (REEs) to absorb global supply shocks. Secondly, policymakers must leverage multilateral diplomatic frameworks, specifically the Quad, the Colombo Security Conclave, and the India-Middle East-Europe Economic Corridor (IMEC), to establish resilient “friend-shored” supply chains for semiconductors, lithium processing, and telecommunications infrastructure, structurally reducing dependency on adversarial monopolies<sup>57</sup>.

#### 7.4 Mandate “AI-Safe” and Zero-Trust Critical Infrastructure

The digitization of India's economy necessitates an impenetrable cyber-defence architecture. The transition to smart energy grids, automated financial markets, and digital healthcare repositories makes the nation's Digital Public Infrastructure (DPI) a highly lucrative target for advanced persistent threats (APTs).

Policymakers must enact legislation mandating the integration of **Zero Trust Architecture (ZTA)** across all critical national infrastructure (CNI). Unlike perimeter-based security models, ZTA operates on the assumption that a breach is inevitable or has already occurred, requiring continuous cryptographic verification of every user and device within a network<sup>58</sup>. Furthermore, as the era of quantum computing approaches, threatening to break contemporary encryption standards, the government must mandate and fund the transition to Post-Quantum Cryptography (PQC) standards for all military, financial, and governmental communications by 2030<sup>59</sup>.

#### 7.5 Cultivate Asymmetric Deterrence and Doctrinal Agility

Finally, at the doctrinal level, the Integrated Theatre Commands (ITCs) must formally internalize strategies for asymmetric and cross-domain deterrence. Recognizing the sheer scale of the conventional capability gap with primary adversaries, India must heavily invest in low-cost, high-impact asymmetric assets.

This includes the rapid scaling and deployment of indigenous autonomous drone swarms for saturation strikes, the proliferation of loitering munitions, and the expansion of offensive cyber-capabilities capable of inflicting strategic paralysis on an adversary's logistical nodes<sup>60</sup>. By visibly demonstrating the capability and political will to execute disproportionate, cross-domain retaliation against gray-zone provocations, India can re-establish the deterrence equilibrium necessary to maintain a stable strategic environment.

### 8. Conclusion: Securing the Centenary Vision

The aspiration to achieve *Viksit Bharat 2047* represents the most

ambitious economic and developmental mobilization in India's post-independence history. The transition to a \$30–\$40 trillion, technologically sovereign, and universally prosperous economy requires an unprecedented national synergy. However, as this analysis has demonstrated, the trajectory of India's economic ascension intersects directly with an increasingly volatile and multipolar global order. The foundational premise of this paper is that the "Security-Development Nexus" is absolute; India cannot sustain its developmental miracle if it remains strategically vulnerable to external coercion, technological denial, or multi-domain subversion<sup>61</sup>.

The contemporary threat matrix confronting New Delhi has fundamentally evolved beyond the traditional binary of continental border disputes and conventional deterrence. While the geopolitical friction along the Line of Actual Control (LAC) and the imperative for maritime dominance in the Indian Ocean Region (IOR) demand continuous military modernization, the frontiers of statecraft have inextricably expanded into the gray zones of cyberspace, outer space, and human cognition<sup>62</sup>. Furthermore, the weaponization of economic interdependence, particularly regarding critical minerals and semiconductor supply chains, highlights that geoeconomics is now a primary theatre of strategic contestation<sup>63</sup>.

To navigate this era of multi-domain disruption, the piecemeal acquisition of military hardware is insufficient. Securing the centenary vision necessitates a paradigm shift in India's grand strategy, moving from reactive defence to proactive, cross-domain deterrence<sup>64</sup>. The frameworks established under the *Defence Forces Vision 2047*, specifically the operationalization of Integrated Theatre Commands (ITCs) and the institutionalization of specialized cyber, space, and cognitive forces, mark a critical inflection point in the maturation of the Indian armed forces.

However, the ultimate guarantor of India's strategic autonomy is deep-tech *Aatmanirbharta* (self-reliance). By accelerating Civil-Military-Academia Fusion (CMAF), fortifying its Digital Public Infrastructure (DPI) with zero-trust architectures, and embedding its supply chains within minilateral alliances of shared democratic values, India can insulate its economic engine from systemic geopolitical shocks<sup>65</sup>.

In conclusion, *Viksit Bharat 2047* is not merely an economic destination; it is a strategic imperative. The state's ability to project Comprehensive National Power (CNP) will dictate whether its rise is accommodated or contested by the international system. By executing the multi-front strategies outlined herein, India possesses the demographic vitality, diplomatic agility, and institutional resolve to not only deter immediate coercion but to emerge as a resilient, stabilizing pole in the 21st-century global order. The realization

of a fully developed India by its centenary will ultimately stand as a testament to its mastery of the security-development nexus.

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# Growing Population: A Challenge or Boon for the Development of India

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## **Abstract**

India is the most populous country of the world with the population of 146 Crores as on 01 July 2025. ([worldometers.info/world-population/india-population](http://worldometers.info/world-population/india-population)). It has a population of 17.787% of the world's population. India's population is growing with an annual growth rate of 0.857%. The population of a country contributes to its Economy, specially its working population. India's working population ratio is 53.40 in 2025. In India, the ratio of children in the age group 0-14 years has been continuously declining and the ratio of working population is increasing. As growing population exists an opportunity, it may poses challenges such as unemployment, health care, educational, deforestation, unskilled labor. This paper aims to study the relationship between the population growth and development. Analyzing and interpreting secondary data, retrieved from various cite and articles from google scholar, this paper presents a comparative study on the Challenges and opportunities of growing population in India.

**Keywords:** Population, unemployment, development, growth rate.

## **1. Introduction**

Population is a main determinant of economic and social development of a country. It effects the production, labor supply and consumption pattern and resource utilization of a country. To achieve our goal of Viksit Bharat by 2047, we need skilled and healthy workforce in all the sectors. For developing country like India it presents both opportunities and challenges. According to the report of United Nations' World Population Dashboard India with the population of 146 crore, is the most populous country of the world. It accounts for approximately one -sixth population of the world's population. It is matter of argument whether the growing population has a positive effect on the development for a country or its posses the challenges for the country. Malthus was the first man who described population an obstacle in the development of a nation. He argued that the earth has a fixed carrying capacity. If the population, reaches beyond this capacity it will be destroyed by the nature. Some scholars have argued that a growing population increases labor supply and foster innovation, which id good for economic development,

but other scholar have argued that it posses the risks like unemployment, poverty, and resource depletion. In the context of India, it is argued that it has the largest group of young population in the world.It is a young country as the median age of its population is 29.8 Years. According to the report ofUnited Nations Population Fund (UNFPA) its 68% of the population is between 15 and 64 years old. So this can be very beneficial for the development of the country. However, it can be challengeable for India as it may lead the country towards unemployment, health problems, over exploitation of resources and environmental degradation.

## **2. Objective of the Study**

Recent demographic reports of various organizations indicate that India has become the largest populous country in the world with the population of 1.46 billion in 2025. But on the other hand, the fertility rate of the country has declined to about 1.9 births per woman. This shows that growth rate of Indian population is declining. This research paper examines the challenges and prospectus of growing population of India. This paper aims to analyze demographic trends, economic benefits, social challenges, environmental impacts, and other aspects of India's population.

## **3. Demographic Trends in India**

Demographic trends reflect the size, composition, change and distribution of population over time. India's demographic changes shows declining in fertility rates and mortality rate, improvement in sex ratio, literacy rate, and life expectancy. For the understanding of the growth rate of the population it is very important to examine the demographic indicators such as fertility rates, age distribution, and population projections.

### **3.1 Population Size**

According to the report of United Nations' World Population Dashboard India with the population of 146 crore, is the most populous country of the world surpassing China. It accounts for approximately one - sixth population of the world's population. India's population has more than tripled in the six decades following Partition, from 361 million (36.1 crore) people in the 1951 census to more than 1.2 billion (120 crore) in 2011. According to the 1951 census, the population of India was 36.1 crore and it has increased triple time and reached 120 crore in 2011. The growth accelerated in the decades after independence shows the improvements in healthcare, sanitation, and food production, which reduced mortality rates and increased life expectancy.

### **3.2 Fertility Rate Decline**

According to the Census data of 1951 the total fertility rate of India

was 5.9 per women and it has experienced a significant decline in the census of 2011 and it was recorded 2.5 per women. The Total Fertility Rate (TFR) has fallen below the replacement level of population. This decline reflects improvements in female education, access to contraception, urbanization, economic development.

### **3.3 Age Structure**

In 1951 India has approximately 51 percent of working population and it has increased 11 percent and reached approximately 62 percent in 2011. It shows that the percentage of working population is increasing and creating a large potential labor force. This demographic structure will provide India an opportunity for economic growth through increased productivity and labor participation.

### **3.4 Population Projection**

Although fertility rate is declining, India's population is expected to continue growing due to demographic momentum. According to estimates from the United Nations and other demographic studies Indian population will cross the number 165 crore in 2047 and India will be most populous country in the world.

### **3.5 Increasing Urbanization**

Rapid urbanization is another major demographic trend in India. People are migrating from rural areas to urban areas in search of better employment, education, health facilities and living standards. It was 17-18 percent in 1951 and in 2011 it has reached about 31 percent in 2011. Growing urban population will foster the industrial development and service sector.

## **4. Role of Population in Viksit Bharat 2047**

In 2047, India will complete its 100 year of independence. By 2047 India aims to be a developed country. It is the most populous country in the world. The population of India can be a powerful asset for the development of this country. It can play a significant role in achieving the economic growth, social progress, global identity. It plays a crucial role in attaining the vision of 'Viksit Bharat in 2047". The vision of Viksit Bharat is to foster the economic growth and sustainable development, enhancement in infrastructure and strengthen social welfare initiatives. It will ease the human life, increase the productivity and enhance overall efficiency (N. R. Singh, 2024).The young population of India with innovative government policies like Digital India, Startup India, has the potential to position India among the top economies of the world. For the vision of Viksit Bharat 2047 India requires the unwavering commitment of its working population (Mahida, R. G.2024).Growing population can be asset for country's development or it

may be challengeable. The following conversation may be helpful in analyzing the role of population in the development of Viksit Bharat.

## **5. Population Growth as a Boon**

Population Growth can contribute positively in the development of India in many ways

### **5.1 Availability of Labor**

A large population creates a sizable labor force, which is essential for advancing economic growth and industrialization. Manufacturing and agriculture are two industries in emerging nations that greatly benefit from this labor. The growth of important industries like information technology, manufacturing, services, and construction has been facilitated by the availability of a sizable and diverse workforce in India. Furthermore, the nation is a desirable location for both domestic and foreign investors due to its wealth of human resources.

### **5.2 Demographic Dividend**

The demographic dividend, or the potential for economic growth when the working-age population is greater than the dependent population, is one of the most important benefits of India's population structure. As more people enter the labor, productivity rises and the country's income rises as well. Such demographic shifts have significantly boosted economic growth, according to data from emerging economies. However, this benefit won't be completely realized unless the workforce has access to sufficient employment options, education, and skills.

### **5.3 Expansion of Domestic Markets**

A large population increases consumer demand by creating a sizable domestic market for products and services. This need stimulates entrepreneurship, propels industrial growth, and draws both foreign and domestic investment. Multinational corporations have been drawn to industries like telecommunications, retail, technology, and financial services in India due to the country's growing consumer base. As a result, this increasing demand boosts the economy and helps create jobs.

### **5.4 Innovation and Human Capital**

A larger population raises the chances of nurturing talented individuals who can contribute to advancements in science and technology. In India, this has resulted in the development of highly skilled professionals in areas such as information technology, engineering, medicine, and entrepreneurship. These individuals not only strengthen the country's economy but also make significant contributions at the global level.

## **5.5 Urbanization and Development**

India's population is growing at a rapid rate, which has contributed significantly to the country's urbanization. Urban areas are becoming the hubs of economic growth as more individuals relocate there in quest of better prospects. These cities promote technical innovation, industrial growth, and the construction of contemporary infrastructure. Urbanization has significantly improved living circumstances, decreased poverty, and increased access to opportunities and services, all of which have contributed to India's overall social and economic success, according to numerous studies.

## **6. Population Growth as a Curse**

Despite its advantages, population growth also presents serious challenges for India's development.

### **6.1 Unemployment**

Unemployment is one of the main issues brought on by population expansion. Many young people enter the workforce every year, yet the economy frequently cannot supply enough jobs to accommodate them. Underemployment, pervasive poverty, and social unrest might result from this lack of employment possibilities. Furthermore, the nation is unable to fully capitalize on the economic advantages of its sizable working-age population due to excessive youth unemployment, which compromises the demographic dividend's potential benefits.

### **6.2 Pressure on Natural Resources**

The demand for vital natural resources like water, arable land, and electricity is greatly increased by India's population growth. Widespread water shortages, deforestation, and agricultural land degradation are only a few of the major environmental and resource-related issues the nation already faces. The strain on these finite resources increases with population growth, resulting in increased environmental stress and possible resource-related conflicts. In order to guarantee long-term economic growth and environmental stability, it is becoming more and more crucial for India to implement sustainable resource management techniques, effective use of water and energy, and actions to preserve forests and soil.

### **6.3 Poverty and Inequality**

Large-population nations frequently struggle with severe issues like poverty and food insecurity, primarily as a result of their inadequate agricultural resources (Alexandratos, 2005). Regional or ethnic strife, water scarcity, and climate change are some of the other concerns that further limit their development. Additionally, several of these countries have a sizable unemployment rate among young people between the ages of 15 and 24,

which raises the possibility of political instability and social unrest. These nations may face an uncertain future if the anticipated drop in fertility rates does not occur. Furthermore, if living conditions are not improved, there may be more instability, war, and an increase in the number of refugees and internally displaced people worldwide. Land degradation is already an issue, and the amount of cropland available per person is declining (World Bank 2008). When population growth outpaces economic growth, poverty may result. In these situations, resources have to be distributed among more people, which lowers per capita income. Despite India's achievement in reducing poverty, income disparity is still a serious issue.

#### **6.4 Pressure on Infrastructure**

Important public infrastructure, including as transportation networks, housing facilities, educational institutions, and healthcare services, is under tremendous strain due to rapid population increase. The demand for these vital services rises dramatically with population growth, frequently beyond the capacity of current systems. Governments find it challenging to offer all individuals sufficient and effective services as a result of this mismatch. The effects are especially noticeable in cities, where dense populations result in cramped living quarters, severe traffic jams, and overburdened public utilities. Furthermore, poor waste management and sanitation practices become serious issues that have an impact on public health and general well-being. These difficulties show how urgently efficient planning and sustainable infrastructure development are needed to handle expanding populations.

#### **6.5 Environmental Degradation**

A number of environmental issues, including as increasing pollution levels and the escalation of climate change, are further exacerbated by the fast population expansion. Increased industrial activity, increased transportation use, and increased energy demand all contribute to rising greenhouse gas emissions as the population grows. This in turn speeds up environmental deterioration, leading to issues like pollution of the air and water, deforestation, biodiversity loss, and depletion of natural resources. Maintaining ecological balance is becoming more challenging due to the increasing load on the environment. As a result, environmental sustainability has emerged as a crucial issue for India's future growth, necessitating careful planning and the adoption of sustainable practices to guarantee that economic advancement does not come at the expense of environmental health

### **7. Government Policies and Population Control**

The Government of India has undertaken a wide range of policies and initiatives aimed at effectively managing population growth while simultaneously enhancing overall human development. One of the most

significant steps in this direction was the introduction of national family planning programs, through which India became one of the first countries in the world to actively promote population control measures. These programs emphasize the importance of birth control, reproductive health awareness, and responsible parenthood, helping individuals make informed decisions about family size. Alongside this, the promotion of education—particularly female education—has emerged as a powerful tool in reducing fertility rates. Educated women are more likely to marry at a later age, have fewer children, and participate more actively in economic activities, thereby contributing to both social and economic progress. Government initiatives encouraging girls' education have played a major role in bringing down birth rates across the country. In addition to education, improvements in healthcare systems have significantly impacted population trends. Better access to medical facilities has led to a decline in infant mortality rates and an increase in life expectancy. As more children survive into adulthood, families tend to prefer smaller family sizes, further contributing to population stabilization. Moreover, the government has introduced various skill development programs to enhance the capabilities and employability of the growing young population. These initiatives aim to equip individuals with the necessary skills required in modern industries such as technology, manufacturing, and services, thereby strengthening the workforce and supporting economic growth.

Looking toward the future, India's demographic pattern will continue to be shaped by several important factors. Rapid urbanization, ongoing economic development, advancements in technology, and the urgent need for environmental sustainability will all play a crucial role in determining the country's growth trajectory. While these factors present numerous opportunities for progress and development, they also pose significant challenges that require careful planning, effective policy implementation, and sustainable strategies to ensure balanced and inclusive growth. It is essential for the country to focus on converting its large population into a productive and skilled workforce, or human capital, by making substantial investments in critical areas such as education, healthcare, and the creation of employment opportunities. By ensuring that people are well-educated, healthy, and equipped with the necessary skills, the nation can harness the full potential of its population to drive economic growth, innovation, and social development. On the other hand, failing to provide adequate education, healthcare, and job opportunities could result in a situation where the country's vast demographic resources remain underutilized, leading to a significant loss of potential benefits and limiting progress toward long-term national development. (Walker, R. J. 2016).

## 8. Conclusion

The question of whether population growth is a curse or a boon for India is complex and cannot be answered in straightforward terms. Population growth has far-reaching implications, both positive and negative, for the country's social, economic, and environmental development. On the positive side, a large population provides India with a vast and diverse labor force, which can be harnessed to support industrialization, technological innovation, and the expansion of the service sector. It also creates a sizable domestic market, encouraging entrepreneurship, trade, and investment, and offers the potential for a demographic dividend—a period in which the working-age population exceeds the dependent population—providing a unique opportunity for rapid economic growth if effectively utilized.

At the same time, rapid population growth presents significant challenges. It places immense pressure on limited natural resources such as water, land, and energy, and increases the demand for public infrastructure, including transportation, housing, healthcare, and educational facilities. Employment opportunities may not grow fast enough to absorb the large number of young people entering the workforce, leading to unemployment, underemployment, and social tensions. Additionally, population growth can exacerbate environmental degradation, pollution, and climate change, making sustainable development a pressing concern. Therefore, population growth in itself cannot be labeled as entirely positive or negative; its impact depends largely on how effectively a country manages its human resources. If India invests strategically in areas such as quality education, skill development, healthcare, and sustainable urban and rural development, it can convert its large population into a productive and skilled workforce. By doing so, the country can maximize the benefits of its demographic potential, transforming population growth into a powerful engine for economic growth, social progress, and long-term national prosperity. Proper planning, sound policy interventions, and investment in human capital are thus essential to ensuring that India's population becomes a source of strength rather than a burden.

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# Rationale Behind Simultaneous Elections; A Reform for Viksit Bharat 2047

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## **Abstract**

Simultaneous elections in India, entailing the concurrent conduct of elections for the Union and State Legislatures alongside Local Bodies, have emerged as a significant reform aimed at enhancing the efficacy of democratic governance. The existing staggered electoral framework often results in repeated imposition of the Model Code of Conduct, diversion of administrative resources, policy stagnation, voter fatigue, and considerable economic expenditures. This study critically examines the rationale, implications, and potential benefits of implementing simultaneous elections, emphasizing their capacity to ensure policy continuity, optimise resource allocation, enhance electoral participation, and foster political stability. Drawing upon historical electoral data, empirical research, and comparative analyses, the paper demonstrates how synchronisation may facilitate inclusivity in candidate selection and strengthen the overall effectiveness of governance. The rationale mentioned in the paper suggest that simultaneous elections represent a pragmatic mechanism to streamline electoral processes, mitigate systemic inefficiencies, and support a more resilient, participatory, and stable democratic polity in India.

**Keywords:** Simultaneous elections, electoral reforms, governance, policy continuity, voter fatigue, resource optimisation, political stability, Model Code of Conduct, administrative efficiency.

## **I. Introduction:**

To make government work more smoothly and reduce complications in the election system, the idea of holding elections for the central government, state governments, and local bodies all at the same time is getting a lot of attention in India. Right now, elections are held at different times in different states, which means the election process is almost always going on somewhere in the country. These frequent elections create many problems and make it harder for both the central and state governments to focus fully on governance and development. At any point during the year,

some part of the country is usually going through an election. This constant election cycle mainly affects development and day-to-day governance, as policy decisions are often delayed because the Model Code of Conduct remains in force for long periods. Between 2019 and 2023, India experienced one general election along with thirty elections for different State Legislative Assemblies.

**Table 1: List of various elections held from 2019-2023**

Sl. No.	ELECTIONS	YEAR
1	General Elections to constitute the House of the People	2019
2	Sikkim	2019
3	Odisha	2019
4	Andhra Pradesh	2019
5	Arunachal Pradesh	2019
6	Maharashtra	2019
7	Haryana	2019
8	Jharkhand	2019
9	Delhi	2020
10	Bihar	2020
11	West Bengal	2021
12	Tamil Nadu	2021
13	Puducherry	2021
14	Kerala	2021
15	Assam	2021
16	Uttarakhand	2022
17	Uttar Pradesh	2022
18	Punjab	2022
19	Manipur	2022
20	Goa	2022
21	Himachal Pradesh	2022
22	Gujarat	2022
23	Karnataka	2023
24	Meghalaya	2023
25	Nagaland	2023
26	Tripura	2023
27	Mizoram	2023
28	Chhattisgarh	2023
29	Madhya Pradesh	2023
30	Rajasthan	2023
31	Telangana	2023

It is evidently clear that every year the country conducts elections for four to five States Legislative Assemblies. Because elections keep happening in different parts of the country, political parties, leaders, legislators, and both State and Central Governments often spend most of their time and resources preparing for elections instead of concentrating on governance. If elections were held at the same time, governments would be able to focus more on development work and carrying out policies that benefit the people.

## **2. Rationale for Simultaneous Elections in India**

The idea of holding simultaneous elections is based on several reasons, all aimed at making the election process more efficient, effective, and transparent. Conducting elections at the same time helps make administration easier and ensures better use of available resources. In a large and diverse country like India, holding separate elections at different levels requires massive deployment of money, manpower, and logistics. Aligning the election schedules of the Lok Sabha and State Legislative Assemblies provides a practical way to simplify the election process, improve administrative efficiency, and make the best use of financial and human resources.

The succeeding paragraphs of this paper highlight in detail the rationale for holding simultaneous elections.

### **2.1 Fosters Continuity and Institutional Stability in Governance:**

Holding elections for the House of the People and State Legislative Assemblies at the same time would help simplify the electoral process and promote a more stable political environment. The current system of frequent, staggered elections disrupts the continuity of policies, divides political attention, and places a heavy financial burden on the nation. By synchronising elections, a more stable political setting can be created, enabling governments to focus more on governance and development rather than constant election campaigning.

In this context, it is pertinent to invite attention to the observation made by the Supreme Court in *Jaishri Laxmanrao Patil v. The Chief Minister And Ors.* The court observed-

*"169. The time fleets, generations grow, society changes, values and needs also change by time. There can be no denial that law should change with the changing time and changing needs of the society."* Because several states have elections every year, governments often find it hard to function smoothly. This constant election cycle creates uncertainty and instability, as leaders are busy dealing with election pressures and changes in political alliances before and after polls.

Holding all elections at the same time offers a practical solution. It can

make governance more efficient and reduce the high cost of repeated elections. When elections for the central and state governments are held together, both levels seek the public's mandate at the same time. This helps ensure continuity in policies and allows governments to plan and carry out their work with more confidence and clear direction.

## **2.2 Averting Policy Stagnation Resulting from the Repeated Enforcement of the Model Code of Conduct (MCC):**

The imposition of the MCC would entail that the government shall not

“(a) announce any financial grants in any form or promises thereof; or

(b) (except civil servants) lay foundation stones etc. of projects or schemes of any kind; or

(c) make any promise of construction of roads, provision of drinking water facilities etc. or

(d) make any ad-hoc appointments in Government, Public Undertakings etc. which may have the

effect of influencing the voters in favor of the party in power.”The recurrence of elections leads to the extended enforcement of the Model Code of Conduct, thereby contributing to policy stagnation and a decline in governance effectiveness. Beyond routine administrative functions, the execution of welfare programmes and the advancement of government projects are adversely affected until the Code is withdrawn. In certain instances, essential schemes suffer disruptions due to ongoing electoral processes, even when the Model Code of Conduct is not operative across the entire State or the country. Moreover, governments often defer decisions on critical, time-bound projects, resulting in delays and a deceleration in their overall implementation.

## **2.3 Reducing the Diversion of Government Machinery and Public Institutional Resources:**

During the elections to the 18<sup>th</sup> Lok Sabha (House of the People) in 2024, the ECI enlisted the services of more than 70 lakh personnel to serve as polling officials, overseeing the election process at 12 lakh plus polling stations nationwide. This equates to an average of around 6 personnel per polling station.

Polling stations are frequently set up in government and private educational institutions, requiring the engagement of teachers and school staff in election-related duties. This practice diverts academic personnel from their primary mandate of education and disrupts the regular functioning of schools, which are closed not only on polling days but also during the preparatory period preceding elections. Similar disruptions affect employees

of the Central and State Governments and Public Sector Undertakings, who are assigned electoral responsibilities and mandated to undergo training in election procedures, thereby detracting from their routine administrative functions.

The persistence of frequent elections intensifies these disruptions, as a significant portion of the state's administrative apparatus—including government officials, educators, and other public-sector personnel—is repeatedly mobilised to ensure the conduct of polls. This recurrent redeployment results in a sustained diversion of institutional attention away from core functions. The implementation of simultaneous elections would alleviate these challenges by minimising the frequency of such mobilisation and enabling a more efficient utilisation of administrative and human resources.

#### **2.4 No Dent in Relevance of Regional Political Parties:**

Besides the National parties, India has a significant presence of regional parties, and they are in power in many States. When regional parties effectively highlight local concerns to the electorate, voters would not be swayed by only national issues in the event simultaneous elections are held. Conducting elections simultaneously might enhance grassroots democracy by limiting the opportunity for external campaigners, thereby encouraging a heightened focus on local issues.

In an article published by Center for Study of Developing Societies (CSDS) and Association of Democratic Reforms (ADR), states that “If we consider elections from the 1989 general election onwards, there have been 31 instances of holding simultaneous elections for State Assemblies and the Lok Sabha in different States: Andhra Pradesh (1989, 1999, 2004, 2009 and 2014), Odisha (2004, 2009 and 2014), Karnataka (1989, 1999 and 2004), Sikkim (2009 and 2014), Tamil Nadu (1989, 1991 and 1996), Maharashtra (1999), Assam (1991 and 1996), Haryana (1991 and 1996), Kerala (1989, 1991 and 1996), Uttar Pradesh (1989 and 1991), West Bengal (1991 and 1996), Arunachal Pradesh (2009 and 2014) and Telangana (2014). When simultaneous elections for the Assembly and the Lok Sabha were held in these States, in 24 elections the major political parties polled almost a similar proportion of votes both for the Assembly and the Lok Sabha, while only in seven instances was the choice of voters somewhat different. It was noticed thrice in Tamil Nadu (1989, 1991 and 1996) when the votes polled by the Congress and the All India Anna Dravida Munnetra Kazhagam were different for the Assembly and Lok Sabha. The other similar examples are from Arunachal Pradesh during the 2004 and 2014 elections (when the Bharatiya Janata Party polled more votes for its Lok Sabha candidates compared to

those for its Assembly candidates), in Haryana during the 1996 elections and in Andhra Pradesh in 2014. During the same period, when in many States the Assembly and Lok Sabha elections were held at different times, the electoral outcome (votes polled by different parties) of the two elections has been different.”

A comparison of Bharatiya Janata Party (BJP) and Biju Janata Dal (BJD) vote share in Odisha during the simultaneously held 2019 Lok Sabha (Parliament) and Odisha Assembly elections clearly underlines the maturity of electorate. In the 2019 Lok Sabha polls, BJD led BJP by roughly 4–5 percentage point in vote share. In the 2019 Assembly polls, BJD’s lead over BJP was larger at about 12 percentage points. This suggests that while voter support for BJP in national-level elections in Odisha was relatively strong, the BJD performed significantly better in the state-level elections held at the same time.

**2.4.1 Curious Case of Nanded: Split Voting Behaviour**

A quick mention of what happened at Nanded in November 2024 will not be out of place.

**Table 2: Nanded Lok Sabha (By-Election) Result 2024**

Party	Vote Share%
Indian National Congress (INC)	46.88
Bharatiya Janata Party (BJP)	41.61
Vanchit Bahujan Aghadi (VBA)	8.20

**Table 3: Nanded Assembly Segment Results 2024**

Assembly Segment	Winning Party	Vote Share%	Runner up Party	Vote Share%
Nanded South	SHS	29.59	INC	28.55
Bhokar	BJP	57.15	INC	35.46
Nanded North	SHS	37.68	INC	36.10
Naigaon	BJP	55.63	INC	35.12
Deglur	BJP	54.09	INC	32.52
Mukhed	BJP	44.94	INC	27.65

In November 2024 Indian National Congress(INC) captured the Nanded Lok Sabha (by- election) seat with a higher vote share at the parliamentary

level. In contrast, every assembly segment under the Nanded parliamentary constituency (like Nanded South) was won by candidates from the BJP-led camp (e.g., Shiv Sena) in the state assembly polls; despite the same electorate and simultaneous election. This indicates split voting behaviour — voters chose INC at the national level while preferring BJP/Mahayuti alliance at the state level in the same polling cycle.

It is important to note that in a mature democratic system like India, the outcome of elections to the State Legislative Assemblies or the House of the People (Lok Sabha) elections, whether conducted simultaneously or separately, is influenced by a variety of factors, not solely by the timing of the elections. Instances abound where voters have consistently supported the same political parties in both State and National elections, even when not held simultaneously. There are also cases where voters have chosen regional parties for State elections, diverging from broader national trends favoring specific parties. These examples highlight that voters possess the ability to evaluate their best interests and vote for candidates or parties of their choice.

### **2.5 Increase in Voter Turnout and Reduced Voter Fatigue**

A study by Prof. Csaba Nikolenyi of Concordia University, Canada, shows that holding elections at different times in India discourages people from fully taking part in the democratic process. Presently elections happen so often, many voters choose to participate only in some elections and skip others, which leads to lower voter turnout overall. This “voter fatigue” caused by repeated elections affects how consistently people vote across different elections.

The study suggests that holding national and state elections at the same time would help increase voter participation. In such a system, voters would need to visit the polling booth only once to vote in all elections held together, making the process easier and more convenient. The ongoing cycle of elections currently has a negative effect on voting behaviour, while simultaneous elections can help renew public interest and involvement in elections. At the same time, they can reduce the heavy use of public resources, address problems in the existing election system, and allow governments to focus more on good governance.

Similarly, research by Shackel and Dandoy shows that simultaneous elections have a strong positive effect on voter turnout. They explain this by pointing out that political parties take elections more seriously when multiple levels are involved, campaigns become more focused, and media coverage increases, making it easier for both voters and candidates to engage in the process.

Past experiences in India also support this view. For example, when elections were held together in 1999, states like Karnataka, Maharashtra, and Andhra Pradesh saw an increase of about 11.5% in voter turnout. In Kerala, simultaneous elections in 1977 led to nearly a 20% rise in voter participation. In northeastern states, voter turnout increased by 21% in Arunachal Pradesh and 17% in Assam when elections were held along with national polls. These examples show that holding elections together can significantly boost voter participation, even in remote regions.

### **2.6 Increased Participation of Political Workers**

Conducting elections simultaneously can lead to a more balanced distribution of political opportunities and responsibilities within political parties. Under the existing system, a small group of senior leaders often dominates the electoral arena by contesting elections at multiple levels, thereby concentrating power and limiting opportunities for other party members. In contrast, simultaneous elections create greater scope for diversification and inclusivity among party workers and representatives.

When elections are held together, the pressure on individual leaders to contest multiple elections is significantly reduced. This allows political parties to broaden their candidate selection and provide more members with the opportunity to contest elections. For instance, instead of a senior leader repeatedly contesting both State Legislative Assembly and Lok Sabha elections at different times, a synchronised electoral cycle enables party leadership to field separate candidates for different levels. This, in turn, creates space for new leaders and fresh voices within the party to engage with voters.

Overall, simultaneous elections represent a shift in the internal dynamics of political parties by redistributing political opportunities more equitably. By expanding the pool of candidates and encouraging diversity in representation, such elections contribute to a more inclusive, representative and dynamic democratic process that better reflects the varied interests and aspirations of the electorate.

### **2.7 Governance takes Centre Stage**

A major issue with the current staggered election system in India is that there is almost always an election happening somewhere in the country. This constant electoral cycle means that political parties—including those in power at both the national and state levels—spend a significant amount of their time, resources, and energy on campaigning and election-related activities. Instead of focusing on governance, policy-making, and development projects, lawmakers are preoccupied with strategies to win votes, mobilize supporters, and maintain political visibility. This diversion of

attention often slows down decision-making, delays the implementation of important welfare schemes, and hampers long-term planning.

If elections were held less frequently or, ideally, simultaneously, parties and elected representatives would be able to focus more consistently on governance. With the electoral calendar streamlined, governments could allocate their time and resources toward meeting the needs of citizens, improving public services, and addressing socio-economic challenges rather than being caught up in continuous political contests.

Moreover, reducing the frequency of elections could also have a positive effect on the political environment and law and order. Highly charged campaigns often lead to the use of divisive rhetoric, including hate speeches, communal polarization, and aggressive mobilization of supporters. Such situations can escalate into conflicts, disturbances, and even violence in some areas. By holding elections simultaneously and reducing the number of campaign periods, the intensity of political competition would be lessened, which could reduce such incidents. Law enforcement agencies would also be under less pressure, allowing them to maintain order more effectively.

In essence, synchronising elections could create a more stable political environment, allowing leaders to focus on governance and development, while also reducing the social tensions, confrontations, and law and order issues that are often associated with prolonged and frequent election campaigns. It would allow politics to take a back seat to policymaking, leading to better administration and a safer, more peaceful electoral process.

### **2.8 Mitigates Unfavourable Social and Financial Implications:**

The rationale for conducting simultaneous elections derives, among other factors, from its significant economic and social implications. These include potential effects on economic growth, fiscal deficits, the composition of public expenditure (capital versus revenue), and the mitigation of investment-related uncertainties.

Synchronising the electoral cycles of the Union and State Legislatures facilitates policy coherence and continuity—an outcome often disrupted by the frequent conduct of separate elections. The repeated imposition of the Model Code of Conduct (MCC) contributes to both measurable and intangible policy and administrative paralysis. It hampers decision-making, delays ongoing welfare and development projects, and generates broader socio-economic disruptions. Notable consequences include:

(a) Educational disruption: The allocation of teaching personnel and administrative staff to election duties negatively affects educational delivery and, over time, the quality of learning outcomes.

(b) Law and order challenges: Continuous deployment of police and paramilitary forces may compromise local security conditions, adversely affecting investor confidence.

(c) Voter fatigue: Empirical and anecdotal evidence suggests that repeated elections diminish citizen engagement, leading to lower voter turnout.

(d) Social polarization: Frequent campaigns that exploit identity politics can exacerbate social divisions and communal tensions.

(e) Economic productivity: Given the substantial proportion of migrant workers, industrial and service sector productivity suffers as workers take leave to participate in elections.

(f) Business uncertainty: Representatives from FICCI and CII have highlighted that recurrent elections introduce unpredictability for both businesses and investors, constraining long-term economic planning.

Thus, the costs of holding separate elections for the House of the People and State Legislatures extend well beyond direct electoral expenditures, encompassing disruptions to governance, social stability, and economic activity. Simultaneous elections present a means to mitigate these multifaceted challenges, promoting administrative efficiency, economic stability, and social cohesion.

### **3. Conclusion**

The conduct of simultaneous elections for the Union and State Legislatures, alongside the synchronisation of Local Body elections, constitutes a significant reform with the potential to revitalise democratic governance in India. By harmonising electoral cycles and optimising election-related expenditures, simultaneous elections provide a mechanism to enhance administrative efficiency, political stability, and fiscal sustainability. This approach offers a comprehensive, multi-dimensional solution to the persistent challenges facing the electoral process, thereby contributing to broader socio-political and economic well-being.

Furthermore, simultaneous elections have the potential to foster greater efficiency, effectiveness, and inclusivity within the democratic framework. They address the administrative complexities, financial burdens, and voter disengagement associated with staggered elections. As India undertakes electoral reforms, the adoption of simultaneous elections represents a progressive and transformative initiative, signaling a pathway toward a more resilient, participatory, and dynamic democratic system.

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# NEP 2020 and Viksit Bharat 2047: Opportunities and Challenges for Indian Higher Education

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## Abstract

The National Education Policy (NEP) 2020 sets out to reshape Indian higher education and backs the vision of Viksit Bharat 2047. At its core, NEP 2020 pushes for quality, fairness, flexibility, and practical, skill-driven learning. It encourages universities and colleges to break out of their old silos, give students more academic freedom, go digital, and build a stronger culture of research. This paper looks at how NEP 2020 is changing higher education in India, and digs into how these changes feed into national growth. There are clear upsides: better job prospects, a stronger focus on innovation, and a shot at global competitiveness. But the road isn't smooth. The policy faces real hurdles—thinks gaps in infrastructure, not enough qualified teachers, the digital divide, and money and management woes. Colleges in rural and state areas feel these challenges even more when trying to roll out reforms. In the end, the study argues that real progress depends on how well these changes get put into action, whether institutions are ready, and how much different groups work together. If that happens, higher education can become a solid base for reaching the goal of a developed India by 2047.

**Key words:** National Education Policy, Indian Higher Education, Skill Development, Viksit Bharat 2047, Educational Reforms.

## 1. Introduction

Education has always driven a country's social and economic growth, and India's no exception. Higher education stands right at the heart of this, fueling new ideas, progress, and a better future. As India approaches 2047—100 years of independence—the dream of Viksit Bharat is to build a nation that's not just developed, but fair, self-reliant, and thriving. To get there, India needs a strong and adaptable education system, especially after school. NEP 2020 marks a big shift from the old way of doing things (it replaces the 1986 policy), and it goes after the problems that have stuck around for years: rote learning, stiff academic paths, weak research, and the disconnect between

college and careers. NEP 2020 wants to make education more rounded, more flexible, and more hands-on. It puts a lot on colleges and universities; they're supposed to shape young people so they can truly help the country grow. This paper unpacks what NEP 2020 means for Viksit Bharat 2047, zooming in on higher education. It lays out the new opportunities and takes a hard look at the obstacles that could slow things down.

## **2. The Aspiration of Viksit Bharat 2047 and the Contribution of Higher Education**

Viksit Bharat 2047 is about turning India into a developed country—better lives, a stronger economy, fairer systems, and a bigger role globally. The real backbone of this vision? People. Higher education trains the workforce, sparks innovation, and keeps democratic values alive. Colleges and universities can't just chum out job seekers; they need to produce creators, entrepreneurs, researchers, and good citizens. A strong higher education system powers progress in everything—industry, farming, tech, government, and services. It also tackles tough problems like inequality, joblessness, and uneven development across regions. NEP 2020 recognizes all this and aims to bring higher education in line with India's bigger goals. The policy wants more students in college (raise the Gross Enrolment Ratio), better quality, more research and innovation, and Indian universities that can stand tall on the world stage. In short, higher education is a cornerstone for building the India we want by 2047.

### **3. Salient Aspects of NEP 2020 Pertaining to Higher Education**

NEP 2020 brings in a wave of changes for higher education. One big shift is the push for multidisciplinary learning. Instead of boxing students into arts, science, or commerce, the policy lets them explore different subjects—broadening their minds and building real expertise. It also introduces more flexible degree options and encourages academic freedom, so students and teachers aren't stuck in old routines. There's a strong push for digital learning and making research a bigger part of college life. All these changes are meant to prepare students for a world that keeps changing fast and to help India reach its big goals by 2047.

The policy sets up flexible degree structures with lots of ways for students to enter or leave their programs. The Academic Bank of Credits (ABC) lets students collect and transfer credits between different colleges, making things more flexible, cutting down on dropouts, and encouraging lifelong learning. There's a big push for quality and for colleges to have more control over their own decisions. If a college proves itself, it can even get the right to grant degrees on its own. Colleges are being pushed to step up—better leadership, higher standards, and more accountability. The new Higher Education Commission of India (HECI) aims to simplify the rules and make

everything more transparent. Meanwhile, the National Research Foundation (NRF) is all about boosting research and getting teaching and research to work together. The policy also backs digital education and online learning, hoping to reach more students and make teaching better.

#### **4. Opportunities for Indian Higher Education under NEP 2020**

NEP 2020 opens up a whole bunch of possibilities for higher education in India. One big one is making students more employable by focusing on vocational and skill-based training. Adding internships, fieldwork, and hands-on practice helps graduates actually be ready for the real world and what employers want. Going beyond single subjects and mixing disciplines helps students think critically, get creative, and solve problems—skills that drive innovation and entrepreneurship, which are vital for the economy. Indian colleges can also team up more, both within the country and globally, to raise their academic game. Technology and digital platforms let more students, especially in far-off areas, access quality education. Online classes, blended learning, and digital resources help fill gaps where teachers or facilities are missing. NEP 2020 also pushes for more use of Indian languages, making higher education more inclusive. The NRF's support for research and funding can make India's knowledge base stronger, helping the country become more self-reliant and globally competitive. Overall, NEP 2020 gives a roadmap to make higher education more dynamic, inclusive, and ready for the future.

#### **5. Challenges in the Indian Context**

Still, putting NEP 2020 into action isn't easy. A big problem is the huge gap in resources and infrastructure across different colleges. Many state and rural institutions just don't have enough classrooms, labs, libraries, or digital tools. Fixing these costs serious money. There's also a lack of skilled, motivated teachers, and the new ways of teaching—including digital tools and interdisciplinary courses—mean teachers need ongoing training. But in many places, proper training programs are still missing. The digital divide is another major hurdle, especially for students in rural or poor areas. Many don't have internet access, digital devices, or even basic digital skills. If these gaps aren't closed, digital learning could actually make inequality worse. Money problems, slow bureaucracies, and resistance to change can all slow things down. Central and state governments need to work together, since education is a shared responsibility. And to make sure the policy really works, strong monitoring and evaluation systems are a must.

#### **6. NEP 2020 and Rural and State Higher Education Institutions**

Rural and government colleges are the backbone of India's higher education, especially in states like Haryana. These places open their doors

to first-generation students and people from all sorts of backgrounds. NEP 2020 brings new possibilities for these colleges—but also some real hurdles. Sure, more autonomy, flexible courses, and digital learning can boost academic quality. But when there's not enough money or staff, even the best ideas fall flat. State governments need to step up, offer support, and fund programs that actually build up these colleges. If rural institutions connect with their communities, shape courses around local needs, and help students pick up skills for regional jobs, they'll play a big part in Viksit Bharat 2047.

## 7. Conclusion

The National Education Policy 2020 lays out a big, ambitious plan to overhaul higher education in India. It matches up with the country's vision for Viksit Bharat 2047, putting the focus on quality, inclusion, skills, research, and innovation. Colleges and universities aren't just teaching—they're shaping people, supporting democracy, and driving progress. NEP 2020 pushes students away from rote memorization and towards thinking critically, being creative, and solving real problems. By mixing different subjects, giving students flexibility, and tying skills to what they learn, the policy gets them ready for whatever's next. These changes matter more than ever as the world and technology keep shifting. But the real test is how well and how fast these ideas actually happen on the ground. Good funding, strong teachers, real autonomy, and tech that works—these are all non-negotiable. Fixing the gap between regions and making sure rural and government colleges don't get left behind is just as important. At its core, NEP 2020 can turn higher education into a game-changer for the whole country. With steady political support, teamwork between the centre and states, and everyone involved pulling in the same direction, higher education can lay the groundwork for a developed, self-reliant, and inclusive India by 2047.

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# Scientific Innovation for a Developed India: The Role of Chemistry and Physics in Viksit Bharat-2047

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## Abstract

Science plays a crucial role in achieving the vision of Viksit Bharat 2047 by promoting sustainable development, technological self-reliance, and inclusive socio-economic growth. In this context, chemistry & physics (Materials Science) contribute synergistically to advancements in healthcare, agriculture, energy, environmental sustainability and technology. The present study focuses on the synthesis and systematic investigation of hematite ( $\alpha$ - $\text{Fe}_2\text{O}_3$ ) nanoparticles, emphasizing their potential for multifunctional technological applications. Hematite nanoparticles were synthesized using the sol-gel method and subjected to controlled thermal annealing at different temperatures to examine the evolution of their structural, dielectric, and magnetic properties. X-ray diffraction (XRD) analysis confirmed an increase in crystallite size with annealing temperature, indicating enhanced crystallinity. Dielectric studies showed an increase in dielectric constant with annealing temperature, indicating enhanced polarization behavior. Magnetic measurements using a vibrating sample magnetometer (VSM) indicated increased coercivity and variations in remanent and saturation magnetization, with no complete magnetic saturation observed, highlighting nanoscale magnetic effects. The combination of high dielectric constant and low dielectric loss suggests the suitability of these nanoparticles for high-frequency microwave applications. Additionally, their enhanced magnetic properties make them promising candidates for permanent magnets and magnetic storage devices. Overall, the study demonstrates that controlled annealing effectively tailors the multifunctional properties of hematite nanoparticles. These findings align with national initiatives such as Viksit Bharat-2047 and Atmanirbhar Bharat, highlighting the importance of advanced materials research in driving technological innovation and sustainable development.

**Keywords:** XRD (X-Ray Diffraction), Viksit Bharat-2047, Scientific Innovation, Sustainable Development, Vibrating sample magnetometer (VSM), Atmanirbhar Bharat,

## 1. Introduction

The vision of Viksit Bharat-2047 underscores the importance of sustainable development, technological self-reliance, and inclusive socio-economic growth, with science and technology acting as fundamental drivers. In this context, the interdisciplinary contributions of chemistry & physics (Materials Science) play a crucial role in advancing innovation across key sectors such as healthcare, agriculture, energy, environmental sustainability, and emerging technologies. The development of advanced functional materials with tunable properties is central to these advancements, particularly in rapidly evolving fields such as nanotechnology, energy storage, high frequency electronics, and smart devices [1-3]. In recent years, magnetic nanoparticles (MNPs) have garnered significant research interest due to their unique size dependent properties and wide ranging applications in biomedicine, catalysis, environmental remediation, and high density data storage [4-6]. At the nanoscale, materials exhibit enhanced surface to volume ratios, quantum confinement effects, and tunable magnetic behavior, which enable superior functional performance compared to their bulk counterparts [7-9]. Among various magnetic nanomaterials, iron oxide nanoparticles ( $\text{Fe}_2\text{O}_3$ ) have emerged as highly promising candidates owing to their chemical stability, cost effectiveness, environmental compatibility, and multifunctional characteristics [10-12]. Iron oxide exists in multiple polymorphic forms, namely  $\alpha\text{-Fe}_2\text{O}_3$ ,  $\beta\text{-Fe}_2\text{O}_3$ ,  $\gamma\text{-Fe}_2\text{O}_3$ ,  $\delta\text{-Fe}_2\text{O}_3$ , and  $\epsilon\text{-Fe}_2\text{O}_3$ , among which hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) is the most thermodynamically stable phase [13-15]. Hematite exhibits n-type semiconducting behavior with a band gap of approximately 2.1 eV [16] and possesses remarkable structural, electrical, dielectric, optical, and magnetic properties [17-19]. Structurally,  $\alpha\text{-Fe}_2\text{O}_3$  crystallizes in a rhombohedral (hexagonal) lattice with space group  $R\bar{3}c$ , where  $\text{O}^{2-}$  ions form a hexagonal close-packed arrangement and  $\text{Fe}^{3+}$  ions occupy two-thirds of the octahedral sites [20]. These unique arrangements, combined with its canted spin structure, results in weak ferromagnetic behavior above the Morin temperature ( $\sim 250$  K), while exhibiting antiferromagnetic characteristics below it [21]. Such versatile physical properties make hematite an attractive material for applications in catalysis, gas sensing, magnetic storage, permanent magnets, photocatalysis, and environmental remediation, as well as a key raw material in the iron and steel industry [22]. The physical and functional properties of hematite nanoparticles are highly sensitive to synthesis routes, particle size, dopant incorporation, and post-synthesis treatments such as thermal annealing [23]. Among these factors, annealing temperature plays a pivotal role in influencing crystallinity, microstructure, defect density, grain growth, and magnetic ordering. Controlled annealing can therefore be effectively utilized to tailor the multifunctional properties of hematite nanoparticles for specific technological applications. Previous studies have reported that annealing significantly affects structural, dielectric,

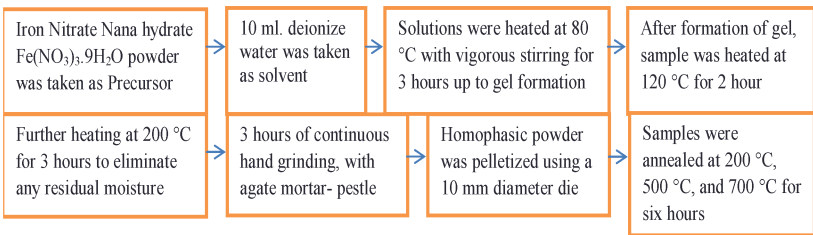
and magnetic properties, including crystallite size, dielectric response, and coercivity [24-25]. However, despite extensive investigations, a comprehensive and systematic understanding of the correlation between annealing temperature and the combined structural, dielectric, and magnetic behavior of sol-gel synthesized  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles remains limited. Several researchers have explored different synthesis techniques and modifications to enhance the performance of hematite nanostructures. For instance, Suman et al. [26] reported temperature dependent variations in magnetic and optical properties of sol gel synthesized  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles. Neelam et al. [27] demonstrated the influence of dopants and annealing on crystallite size and dielectric behavior. Phuan et al. [28] highlighted the role of annealing in improving photoelectrochemical properties of hematite thin films. Yarub et al. [29] observed enhanced crystallinity and optical property modifications due to annealing. Kaur et al. [30] reported improved photocatalytic performance in doped hematite nanostructures, while Ong et al. [31] demonstrated the influence of synthesis temperature on morphology and catalytic efficiency. Hakim et al. [32] reported increased crystallite size and coercivity with increasing annealing temperature. In this study, hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles were synthesized using the sol-gel method and subjected to controlled thermal annealing at different temperatures. The influence of annealing temperature on their structural, dielectric, and magnetic properties was systematically investigated using X-ray diffraction (XRD), dielectric analysis, and vibrating sample magnetometry (VSM). The results demonstrate that annealing significantly enhances crystallinity, dielectric response, and magnetic behavior, including increased coercivity and modified magnetization characteristics, while the absence of complete saturation suggests nanoscale magnetic effects. The observed combination of high dielectric constant and low dielectric loss highlights the suitability of these nanoparticles for high-frequency microwave applications, whereas their enhanced magnetic properties make them promising candidates for permanent magnets and magnetic storage devices. Overall, this study establishes that controlled annealing is an effective strategy for tailoring the multifunctional properties of hematite nanoparticles. The findings of this work are aligned with national initiatives such as Viksit Bharat-2047 and Atmanirbhar Bharat, emphasizing the critical role of advanced materials research in driving technological innovation, sustainability, and self-reliant development.

## 2. Experimental details

### 2.1 Synthesis

Pure hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles were synthesized by sol-gel method. Iron (III) Nitrate Nanahydrate Fe(NO<sub>3</sub>)<sub>3</sub>·9H<sub>2</sub>O salt (Sigma Aldrich) was used as precursor materials. The salt was weighed according to their

stoichiometric ratio and dissolved in deionized (DI) water to form a homogeneous solution. The solution was then heated to 80 °C under continuous magnetic stirring until gel formation was achieved. The resulting gel was subsequently heated at 120 °C for 2 hours to induce solidification, followed by further heating at 200 °C for 3 hours to eliminate any residual moisture. The obtained solidified gel was finely ground using an agate mortar and pestle to achieve homogeneity. After 3 hours of continuous hand grinding, the resultant homophasic powder was pelletized using a 10 mm diameter die in a hand-operated hydraulic press under an applied pressure of 5 tonnes. Finally, the pelletized hematite samples were annealed at varying temperatures (200 °C, 500 °C, and 700 °C) for 6 hours, and the samples were designated as S 200, S 500, and S 700, respectively.

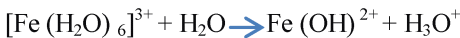


### Reaction pathway for Sol-Gel Derived hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticle

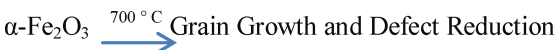
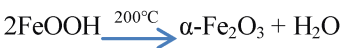
#### 1. Dissolution of Iron Nitrate in water (Sol-Gel):



#### 2. Hydrolysis and Gel Formation:



#### 3. Thermal Decomposition and Phase Transformation (Annealing)



## 2.2 Characterizations Technique

The prepared hematite pellet types samples were characterized using various analytical techniques, including X-ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), Dielectric Constant measurements and Vibrating Sample Magnetometer (VSM) Measurements. The crystal structure of the samples was determined using a Bruker-AXSD8 Advance diffractometer with a Cu K<sub>α</sub> radiation source ( $\lambda = 1.540 \text{ \AA}$ ) over a  $2\theta$  range of  $25^\circ$ - $60^\circ$ . FTIR measurements were taken by Perkin-Elmer 580B IR spectrophotometer using the KBr pellet technique between 4000 and 500  $\text{cm}^{-1}$  for 16 scans at a resolution of 4  $\text{cm}^{-1}$  at room temperature. The variations of dielectric constant with temperature range 100 K to 400 K were measured by two probe methods using Keithley electrometer -6517B interfaced with the lab-view software. Additionally, the magnetic properties of the samples were examined through M-H loop measurements using a Lake Shore 7410 Series Vibrating Sample Magnetometer (VSM) at room temperature under an applied magnetic field of  $\pm 20 \text{ kOe}$ .

## 3. Results and Discussion

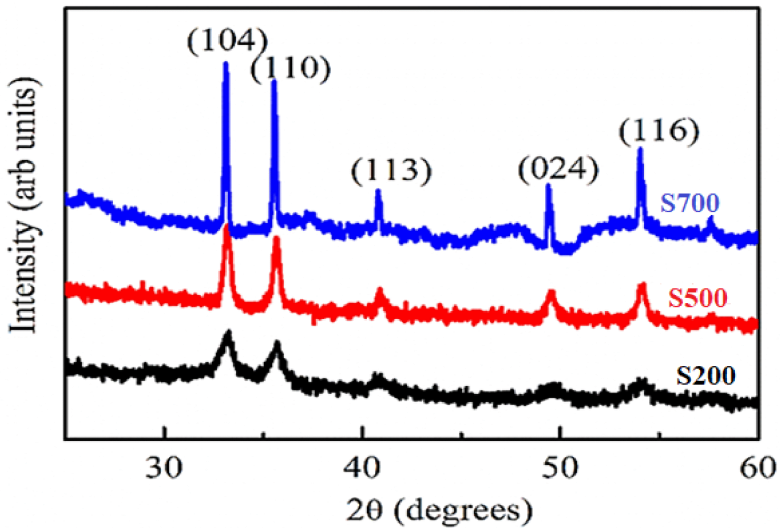
### 3.1 X-ray Diffraction Analysis

The X-ray diffraction (XRD) patterns of the synthesized  $\alpha\text{-Fe}_2\text{O}_3$  nanoparticle samples (S 200, S 500, and S 700) are presented in fig. 1. The XRD patterns of pure hematite show rhombohedral phase in the  $R\bar{3}c$  space group and the peaks are assigned to (104), (110), (113), (024), and (116) planes referring to JCPDS card No. 84-0311 [33, 34]. The diffraction pattern exhibits a prominent peak corresponding to the (104) plane, confirming the formation of the pure hematite phase. Notably, no additional peaks corresponding to secondary iron oxide phases (such as magnetite or maghemite) were detected, indicating the high phase purity of the synthesized samples [35]. The crystallite size (D) and lattice parameters were calculated using the Debye-Scherrer equation [36]:

$$D = \frac{0.89\lambda}{\beta \cos\theta} \quad (1)$$

Where  $\lambda = 1.54 \text{ \AA}$  is the X-ray wavelength,  $\beta$  represents the full width at half maximum (FWHM) of the diffraction peak [37], and  $\theta$  is the Bragg angle [38]. A systematic increase in diffraction peak intensity and a corresponding decrease in FWHM with increasing annealing temperature were observed, indicating an improvement in crystallinity. This trend suggests enhanced atomic ordering and grain growth due to thermally driven recrystallization processes. Additionally, as shown in Table 1, both the crystallite size and lattice parameters increase with annealing temperature, further confirms the enhancement in crystallinity. The increase in crystallite size can be attributed to the coalescence of smaller crystallites and the reduction of structural defects, leading to a more ordered crystalline

framework [39].



**Fig.1:** XRD pattern for pure hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) nanoparticles annealed at 200 °C, 500 °C, and 700 °C

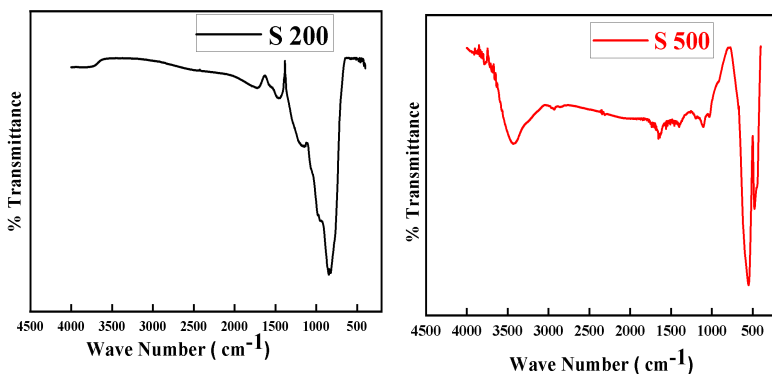
The enhancement in crystallinity of hematite nanoparticles with increasing annealing temperature is primarily attributed to improved atomic diffusion, defect reduction, phase stabilization, and enhanced particle ordering [40]. At elevated temperatures, higher atomic mobility facilitates the rearrangement of atoms into more thermodynamically stable configurations, reducing structural imperfections such as dislocations and grain boundaries. Additionally, the decrease in porosity leads to denser packing of nanoparticles, further promoting crystallite growth. In the hematite samples, increased crystallinity is directly reflected in the sharpening and intensification of X-ray diffraction (XRD) peaks. As annealing temperature rises, the crystallite size increases due to coalescence and grain growth, while defect concentrations decrease, leading to reduced peak broadening. The resulting well-ordered crystal structure exhibits higher phase purity and improved structural integrity, which are crucial for optimizing the material's physical and functional properties.

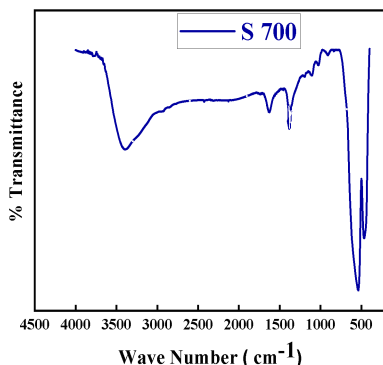
**Table1.** Crystallite size, lattice parameters, and grain size values for pure hematite samples (S 200, S 500 and S 700) annealed at 200 °C, 500 °C, and 700 °C.

Annealing Temperature	Crystallite Size (nm)	Lattice Parameters(Å)		Grain size (nm)
		a-axis	c-axis	
200 °C	21.23	5.021	13.22	24.45
500 °C	22.09	5.029	13.21	39.17
700 °C	36.65	5.037	13.23	72.27

### 3.2. FTIR analysis

Fig. 2, demonstrate the observed Fourier Transform Infrared (FTIR) spectra peaks of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> samples in the wave number ranging from 400 cm<sup>-1</sup> to 4500 cm<sup>-1</sup>. FTIR spectroscopy reveals structural and surface modifications in hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles during thermal annealing. The FTIR spectra of nanoparticles annealed at 200°C, 500°C, and 700°C show variations in Fe-O vibrational bands, hydroxyl (-OH) groups, and adsorbed water, reflecting changes in crystallinity, phase purity, and surface chemistry with increasing temperature. The absorption bands at 456.5 cm<sup>-1</sup> (E<sub>g</sub>) and 547.4 cm<sup>-1</sup> (A<sub>2u</sub>) correspond to the intrinsic Fe-O stretching vibrations in  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>, validating its crystal structure and phase stability [41-43]. Additionally, the broad bands observed at 3404.9 cm<sup>-1</sup>, 2920.8 cm<sup>-1</sup>, and 2848.7 cm<sup>-1</sup> are associated with O-H stretching vibrations from surface hydroxyl groups [44-47]. The assignment of the observed bands of IR for  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> can be seen in table 2. The intensity of these bands decreases with higher annealing temperatures, further supporting the dehydroxylation process. These spectral findings provide valuable insights into optimizing hematite nanoparticles for catalysis, sensors, and energy storage applications, where phase purity and surface properties play a crucial role.





**Fig. 2: FTIR spectra for pure hematite nanoparticles (S 200, S 500 & S 700) annealed at 200 °C, 500 °C and 700 °C**

Furthermore, from FTIR spectra it has been also noticed that as the annealing temperature increased, the peaks gradually augmented which imply the enhancement of crystallisation. FTIR peaks shifted towards lower wavenumber with increasing in annealing temperature. The observed results of FTIR spectroscopy are found in well agreement with the XRD measurements.

**Table 2. The assignment of the observed bands of IR for  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> samples (S 200, S 500 & S**

IR bands in cm <sup>-1</sup>	Assignment	References
456.5	Fe-O vibration, E <sub>u</sub> Characteristic modes	41-43
547.4	Fe-O vibration, A <sub>2u</sub> Characteristic modes,	41-43
547.4	The overlapping of A <sub>2u</sub> and E <sub>u</sub> vibrations band (elongated Fe-O vibration)	41-43
2848.7	O-H Bending (hydroxyl group)	44-47
3404.9	O-H Bending (hydroxyl group)	44-47
2920.8	O-H Bending (hydroxyl group)	44-47

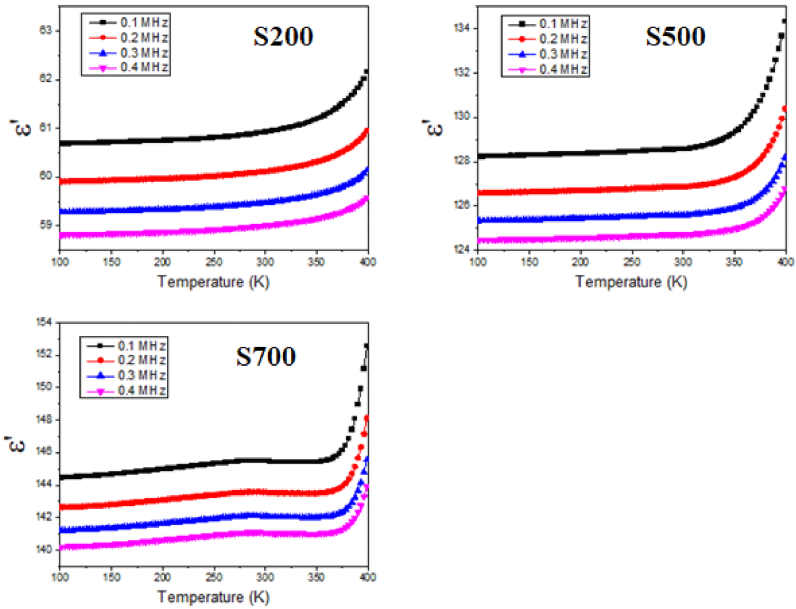
### 3.3 Dielectric Analysis

The dielectric constant ( $\epsilon_2$ ) is a fundamental parameter that characterizes a material's ability to store electrical energy when subjected to an applied electric field. Its value is significantly influenced by both temperature and frequency, as these factors directly impact the polarization mechanisms within the material. Fig. 3, shows the variation of dielectric constant with temperature of hematite samples (S 200, S 500 & S 700) in the temperature range of 100°C-400°C at selected frequencies (0.1 MHz, 0.2 MHz, 0.3 MHz, and 0.4 MHz). The dielectric constant was determined using the relation:

$$\epsilon' = C \quad d / A\epsilon\epsilon$$

where  $\epsilon_2$  represents the dielectric constant,  $C_p$  is the capacitance of the material,  $d$  is the sample thickness, and  $A$  is the area of the pellet-type sample [48]. The results obtained from the experimental data indicate that  $\epsilon_2$  exhibits strong temperature and frequency dependence, governed by thermal activation and dipolar relaxation mechanisms. The temperature-dependent analysis reveals that the dielectric constant increases with temperature across all frequencies, with a significant rise near 400 K, attributed to the thermal activation of dipoles that enhances polarization. As temperature increases, thermal energy facilitates dipole relaxation, allowing them to align more effectively with the applied electric field, thereby leading to a stronger polarization response and an overall increase in  $\epsilon_2$ . This trend indicates a positive temperature coefficient of permittivity (PTCR), which is desirable for high-temperature capacitor applications [49]. The sharp increase observed near 400 K suggests the possible contribution of space charge polarization or incipient phase transitions within the material. At lower temperatures, however, the dielectric constant remains low due to the limited thermal energy available for charge carriers, restricting dipole mobility and alignment with the applied field. This behavior is commonly observed in ionic solids, where localized dipoles experience constrained motion, allowing only partial alignment with the external field. In contrast, at higher temperatures, increased dipole mobility enhances polarization, leading to a rise in  $\epsilon_2$ . Conversely, the dielectric constant exhibits a decreasing trend with increasing frequency across the entire temperature range. At lower frequencies, dipoles have sufficient time to align with the alternating electric field, resulting in a

higher dielectric response. However, as frequency increases, the response time of dipoles becomes insufficient to keep up with the rapidly oscillating field, leading to a reduced dielectric constant. This behavior is evident in all samples, where the lowest dielectric values are observed at 0.4 MHz, while the highest values are recorded at 0.1 MHz. This phenomenon is attributed to the fact that at higher frequencies, dipolar and interfacial polarization mechanisms become less effective, whereas electronic and ionic polarizations, which operate at much faster response times, dominate. The observed frequency dependence can be explained using the Cole-Cole model [50] and the Maxwell-Wagner interfacial polarization model [51], in conjunction with Koop's theory [52, 53]. The gradual decline in  $\epsilon_2$  with frequency is a well-documented characteristic of dielectric materials, arising from the lag in polarization response at higher frequencies. Among the three investigated samples, S 700 exhibits the highest dielectric constant across all frequencies and temperatures, followed by S 500, while S 200 consistently shows the lowest values. The superior dielectric response of S 700 can be attributed to larger grain size, which reduces grain boundary resistance, optimized material composition, which enhances charge carrier density and dipole alignment, and lower defect concentration, which minimizes dielectric losses and improves stability [27, 54]. The relatively high dielectric constant of S 700, even at lower temperatures, further establishes its effectiveness as a dielectric material. The overall trend of decreasing dielectric constant with increasing frequency and increasing dielectric constant with rising temperature is a common feature of oxide materials. The dielectric analysis confirms that the observed trends in  $\epsilon_2$  are driven by well-known relaxation mechanisms. The results suggest that hematite nanoparticles exhibit temperature-dependent and frequency-dependent dielectric properties, making them potential candidates for high-performance electronic applications. Their suitability for high-temperature capacitors, dielectric resonators in communication systems, and energy storage devices is reinforced by their stable dielectric response over a broad temperature range. The findings from this study provide valuable insights into the dielectric properties of hematite nanoparticles and highlight their potential for advanced electronic applications. Table 3, shows the dielectric constant (at selected frequencies) values for hematite nanoparticles annealed at 200°C, 500°C, and 700°C.



**Fig. 3:** Plot of dielectric constant versus temperature at selected frequencies (0.1 MHz, 0.2 MHz, 0.3 MHz, & 0.4 MHz) for hematite nanoparticles (S 200, S 500 & S 700) annealed at 200°C, 500°C, and 700°C.

**Table 3:** Dielectric constant (at selected frequencies) values for hematite nanoparticles (S 200, S 500 & S 700) annealed at 200°C, 500°C, and 700°C.

Sample	Dielectric Constant at 100 °C				Dielectric Constant at 400 °C			
	0.1	0.2	0.3	0.4	0.1	0.2	0.3	0.4
	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz
S 200	61.35	58.89	59.33	58.91	62.37	59.89	61.05	59.46
S 500	127.49	127.17	125.89	123.41	133.27	131.86	127.99	127.17
S 700	145.38	143.23	142.16	141.28	151.99	148.58	146.06	142.19

### 3.4 VSM Measurements

The magnetic properties of the synthesized pure hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) nanoparticles annealed at different temperatures (200°C, 500°C, and 700°C) were investigated using M-H loops recorded at room temperature (Fig.4). The key magnetic parameters, including coercivity ( $H_c$ ) remanent magnetization ( $M_R$ ) and maximum magnetization ( $M_s$ ) are summarized in table 4. The recorded M-H loops indicate that saturation magnetization is not achieved even at an applied magnetic field of 20,000 Oe. This suggests the presence of superparamagnetic nanoparticles [55]. Additionally, the presence of non-saturated, narrow hysteresis loops at all annealing temperatures implies a broad particle size distribution, indicating that the system contains both superparamagnetic and larger agglomerated particles, which contribute to the observed hysteresis behavior [56-58]. The variation in coercivity ( $H_c$ ) with annealing temperature (Table 4) provides further insight into the particle size effect. The lowest coercivity is observed at 200°C, which can be attributed to the small particle size and increased thermal fluctuations, leading to easier magnetization reversal. Conversely, a higher coercivity at 700°C suggests particle growth and enhanced magnetic anisotropy [59]

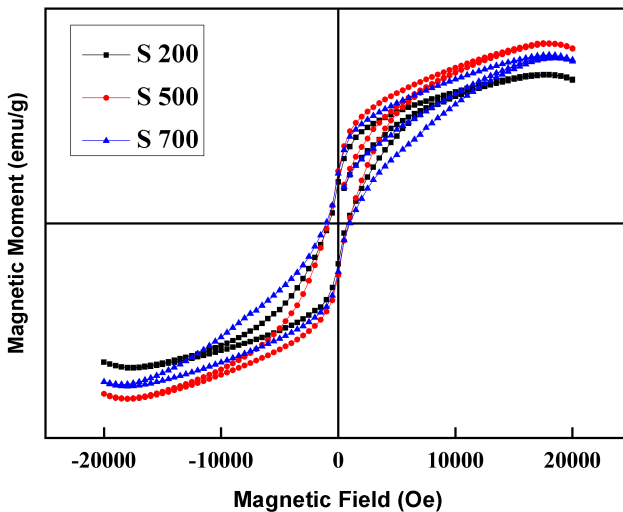


Fig. 4 M-H Curve for  $\alpha\text{-Fe}_2\text{O}_3$  samples (S 200, S 500 & S 700) annealed with different temperature ( 200 °C, 500 °C, and 700 °C).

**TABLE 4: Coercivity ( $H_C$ ), remanence magnetization ( $M_R$ ) and maximum magnetization ( $M_S$ ) for  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> samples (S 200, S 500 and S 700) annealed at different temperature (200 °C, 500 °C, and 700 °C).**

Samples	$M_R$ (emu/g)	$M_S$ (emu/g)	$H_C$ (Oe)	( $M_R/M_S$ )
S 200	0.0022	0.0083	780.3	0.265
S 500	0.0027	0.0104	883.9	0.259
S 700	0.0026	0.0093	988.7	0.279

The observed magnetic behavior confirms that the synthesized hematite nanoparticles exhibit a combination of superparamagnetism and weak ferromagnetic interactions [60]. The increasing coercivity with annealing temperature suggests a particle size-dependent magnetic transition, where larger particles exhibit stronger hysteresis effects due to increased anisotropy and reduced thermal activation. This study highlights the importance of annealing temperature in tuning the magnetic properties of hematite nanoparticles for potential applications in nanomagnetic devices and biomedical technologies.

#### 4. Conclusion

The present study successfully demonstrates the synthesis of hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles using the sol-gel method followed by controlled thermal annealing at different temperatures (200 °C, 500 °C, and 700 °C). The influence of annealing temperature on the structural, dielectric, and magnetic properties of the nanoparticles was systematically investigated through XRD, FTIR, dielectric analysis, and vibrating sample magnetometry (VSM). XRD results confirmed the formation of a single-phase rhombohedral  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> structure with improved crystallinity as the annealing temperature increased. A noticeable increase in crystallite size and lattice parameters was observed, indicating grain growth and reduced structural defects at higher annealing temperatures. FTIR analysis further validated the formation of hematite nanoparticles and revealed the gradual reduction of hydroxyl groups with increasing annealing temperature, confirming improved phase purity and structural ordering. Dielectric studies revealed that the dielectric constant increases with temperature while decreasing with increasing frequency, which is consistent with typical dielectric relaxation behavior described by Maxwell-Wagner polarization and Koop's theory. Among the investigated samples,

the S700 sample exhibited the highest dielectric constant and the most stable dielectric response, indicating improved polarization behavior due to larger grain size and reduced grain boundary resistance. Magnetic characterization through VSM measurements showed that the samples exhibit weak ferromagnetic behavior with unsaturated hysteresis loops, indicating the coexistence of superparamagnetic and ferromagnetic contributions at the nanoscale. The coercivity and magnetization parameters were found to increase with annealing temperature, suggesting enhanced magnetic anisotropy and particle growth. Overall, the results demonstrate that controlled thermal annealing is an effective approach for tuning the multifunctional properties of hematite nanoparticles. The combination of improved crystallinity, enhanced dielectric performance, and favorable magnetic characteristics makes these nanoparticles promising candidates for applications in high-frequency microwave devices, magnetic storage systems, permanent magnets, and advanced electronic components. From a broader perspective, this work highlights the significant role of advanced materials research in driving scientific innovation and technological self-reliance. The development of multifunctional nanomaterials such as hematite nanoparticles can contribute to emerging technologies in electronics, energy systems, and communication devices, thereby supporting national initiatives such as Viksit Bharat-2047 and Atmanirbhar Bharat aimed at sustainable development and a technologically empowered India.

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# AI: A Tool for Viksit Bharat '2047'

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## **Abstract**

AI has emerged as a major technology and brought a revolutionary change in global scenario. It has its footprints in every walk of life from household, education, corporate, business to government policies. Further, India is aiming to become developed economy by 2047 under the mission 'Viksit Bharat'. Therefore, the present research paper aims to identify the role of artificial intelligence in achieving the milestone set under Viksit Bharat 2047 mission and risk associated with the use of artificial intelligence. The study found that AI is a key factor in nation building. It is critical factor for economic development, social growth and good governance. It supports growth of every sector of the economy such as healthcare, education, business and government. However, there is some concern related with the use of AI. Data privacy, algorithm bias and authenticity of the data are some of the major concerns. Indian government should make strict regulatory provisions to promote AI.

**Keywords:** Artificial intelligence; viksit bharat, national building, AI role

## **Introduction**

Viksit Bharat 2047, a mission of Government of India for transforming developing India to developed India and making India a \$30 trillion economy. The slogan of the mission is "Bold Vision, Brighter Future" that indicates strong commitment and resilience of India for holistic growth of all sectors. GOI is aiming to complete the mission up to 2047 when India will celebrate its century of independence. Youth, poor people, women and farmer are the four fundamental pillars of this mission. In order to achieve the objective of the mission, GOI mainly focuses on inclusive growth, sustainable development of every sector of the society, good governance and prioritising different areas like education, infrastructure, healthcare, social welfare and technology. Here, technology has its own importance to achieve the objective. Now a days, artificial intelligence (AI) has become key component for technology advancement. BVR Subrahmanyam, CEO, NITI Ayog opined that role of innovation and AI is crucial to comply Viksit Bharat 2047 mission. He, further, stated that use of AI would increase 30% (approximately) of

current productivity (NITI Aayog, 2025). AI acts as complement as well as supplement to human with its cognitive capabilities such as thinking, perceiving, problem solving and decision making, data collection, data processing and analysis. In 2018-19, GOI asked NITI Aayog to set up national program on AI. NITI Aayog adopted 3 step approach for the same, starting with exploratory project, followed by national project and lastly by collaboration with experts and stakeholders (NITI Aayog, 2018). Further, With a budget of Rs. 10000 crore for five years, GOI has launched India AI Mission with the aim to integrate AI courses at different academic level and setting up of AI or Data lab across Tier 2 and 3 cities of India. The critical areas are agriculture, healthcare, education and urban planning. India is aiming to narrow the gap with developed countries in the area of skill development by 2035. So, GOI is collaborating with academia and industry to comply its mission.

Thus, the present research paper aims to identify the role of artificial intelligence in achieving the milestone set under Viksit Bharat 2047 mission and the risk that may be faced by adopting artificial intelligence.

### **Literature Review**

The present section reviews the available literature in the area of present research objective. The next section analysed role of AI in the view of previous literature and followed by risk associated with the use of AI.

### **Role of AI in Nation Building**

Research on role of AI emphasize that AI is the need of hour for economic growth, social development and good governance. It will convert an economy to innovation driven economy. NITI Aayog in its report in 2025 stated that use of AI will enhance 30% of the current productivity. Further, AI with its data handling and data predictive capability helps to analyse geo-political data, social media trends and economic scenario in real time and support government to make policies. Moreover, AI helps to identify red flags or early warning signals of civil unrest, cross border threat and terrorism so that administrator may act proactively. AI has different tools. One of the tools is Natural Language Processing (NLP) which prevents misinterpretation in language translation thus avoid conflicts (Pasupuleti, 2025).

Further, it significantly contributes in growth of healthcare industries. Due to its data handling capability, it can early diagnose disease (Akila, Gopinathan, Arunkumar, & Malar, 2025). It may analyse images using deep learning algorithm to accurately diagnose different disease. Further, Robotic surgeries have improved health operations. Also, with its Brain Computer Interface features, it can decode brain impulses and allow disable person to

communicate thus helpful in case of treatment of paralysis, spinal cord injuries and neurological impairment. Robotic nursing and smart health monitoring devices improved patient care (Akila *et al.*, 2025). Thus, timely treatment would cure different type of disease without any delay. Moreover, remote consultation is also possible due to AI powered mobile application.

AI accounts for revolutionary change in the area of education. It supports not only students but teachers also. It has automated administrative task such as grading, quiz scheduling and enrolment etc. for teachers. Different AI features such as correcting spelling and grammar, sentence formation, summarising the document, essay and application writing helps both teacher and student during their academic journey (Cardona *et al.*, 2023). Further, speech recognition feature is a boon for differently abled persons. Students can learn at their pace and get customized subject matter instantly. With automated response feature of AI, teacher can assist student when he ran out of time. AI has changed role of a teacher to facilitator (Tahir *et al.*, 2024).

Artificial Intelligence has played a vital role in promoting the concept of digital business in recent years. It had automated various business operations thus improved operational efficiency and supported digital transformation across organisations (Binsar *et al.*, 2025). It also supports management in decision-making through predictive analysis based on consumer data and market trends (Qasim & Khalifeh, 2025). At present, the entire buying process, starting from product selection to final payment, is largely carried out through digital platforms. Moreover, AI-based customer service tools such as chatbots help organisations address customer queries and complaints in a timely manner (Ramesha *et al.*, 2025). As a result, businesses are able to reduce response time, lower operational costs, and minimise dependence on human resources.

Artificial Intelligence is showing its efficiency in public administration and e-governance. It acts as supportive assistant in policy implementation and contributes to economic development (Ajaykumar *et al.*, 2025). The Government of India has been actively promoting digital transactions to improve efficiency and transparency. However, the widespread use of digital platforms raises concerns about the security of personal information, which may be stored or shared with third parties. In this context, AI helps in creating a safer digital environment by detecting potential threats and preventing cyber-attacks (Pasupuleti, 2025). Through machine learning models, AI can identify malicious activities, reduce data breaches, and strengthen cybersecurity frameworks in public systems

### **Risk in Integrating AI**

AI has brought a revolutionary change in every sector of the economy,

including healthcare, education, business, service and governance. However, its integration comes with specific risk despite various benefits. The increasing dependency on AI is posing various legal, social and ethical risk. These risks must be considered efficiently before the use of AI.

One of the primary risks associated with AI integration is related to data privacy and data misuse. AI systems rely heavily on large volumes of data to function effectively. However, the collection, storage, and processing of such data often involve unauthorized access, doubtful authenticity of previously collected data, and misuse of personal information. Acquisti *et al.* (2014) highlight that individuals frequently lose control over their personal data in digital environments, increasing the risk of privacy violations. In many cases, users are unaware of how their data is collected, shared, or monetized, which raises serious ethical concerns.

Another significant risk is algorithmic miscalculation and bias. Although AI systems are designed to process vast amounts of data with high speed and efficiency, they are not immune to errors. Algorithmic decisions are based on training data, and if such data is biased, incomplete, or inaccurate, the outcomes may be misleading or discriminatory. Furthermore, AI systems often operate as “black boxes,” making it difficult to understand the basis of their decisions. This lack of transparency undermines accountability and trust, particularly in critical sectors such as healthcare, finance, and governance.

Due to these limitations, human control and oversight are essential. AI should be viewed as a supportive tool rather than a complete substitute for human intelligence. AI systems provide recommendations, but final decisions should be evaluated and ethically implemented by human beings. Therefore, the adoption of an AI–Human Hybrid Model is more appropriate than a fully automated AI model. Pasupuleti (2025) emphasizes that human judgment plays a crucial role in mitigating risks arising from automated decision-making and ensures ethical accountability.

The rapid expansion of AI also demands robust regulatory frameworks. While investment in AI is necessary for countries to remain competitive in the current technological era, unregulated AI development may pose barriers to nation-building. Gumenyuk *et al.* (2025) argue that the absence of legal and institutional frameworks can lead to misuse of AI technologies, thereby harming social and economic stability. Governments must take responsibility for framing and enforcing laws related to AI governance, data protection, and ethical standards.

Another growing concern is the authenticity and reliability of AI-generated information. AI-generated content may appear accurate and

credible but can be misleading or factually incorrect. Cardona *et al.* (2023) point out that AI systems may generate outputs without verifying factual accuracy, which can lead to misinformation. This risk becomes particularly serious in education and research, where originality and authenticity are fundamental values.

In the education sector, AI adoption has raised concerns among teachers regarding data privacy, personal security, and academic integrity. Many educators observe that students increasingly depend on AI-generated content, which can reduce critical thinking and promote plagiarism. Students may present AI-generated work as their own, thereby compromising ethical learning practices (Cardona *et al.*, 2023).

Similarly, in the healthcare sector, risks such as data breaches, unauthorized access, and algorithmic bias are significant concerns. Healthcare data is highly sensitive, and any breach can have severe consequences. Akila *et al.* (2025) emphasize that biased algorithms may lead to unequal treatment and diagnostic errors, adversely affecting patient outcomes. Comparable risks are also present in sectors such as online shopping, digital finance, and e-governance, where misuse of personal information and data security breaches remain persistent threats.

Finally, it must be acknowledged that AI is a human-driven technology, and therefore, humans bear is fully responsible for its ethical development, regulation, and safe use. As Bryson (2019) argues, AI should not be treated as an autonomous moral agent; instead, accountability must rest with developers, policymakers, and users. Addressing the risks associated with AI integration requires a balanced approach that promotes innovation while safeguarding ethical values, human rights, and social well-being.

### **Conclusion**

Artificial Intelligence has emerged as a powerful catalyst in achieving the vision of *Viksit Bharat 2047*, supporting India's transition into a developed and innovation-driven economy. Its application across critical sectors such as governance, healthcare, education, digital business, and national security demonstrates its capacity to enhance productivity, improve service delivery, and enable data-driven decision-making. By leveraging AI's capabilities in data analysis, prediction, automation, and real-time monitoring, the Government of India can accelerate inclusive growth while addressing the needs of youth, women, farmers, and marginalized communities. Initiatives such as the India AI Mission and NITI Aayog's strategic framework reflect India's strong commitment to building a robust AI ecosystem through skill development, infrastructure creation, and collaboration with academia and industry.

However, the adoption of AI is not without challenges. Risks related to data privacy, algorithmic bias, misinformation, ethical misuse, and overdependence on automated systems necessitate careful governance. An unregulated or fully automated AI environment could undermine trust and hinder nation-building efforts. Therefore, a balanced AI–human hybrid approach is essential, where AI supports decision-making while human judgment ensures ethical and responsible implementation. Strong legal frameworks, transparency, and continuous monitoring are crucial for mitigating risks.

AI, when developed and deployed responsibly, can play a transformative role in realizing the goals of *Viksit Bharat 2047*, fostering sustainable development, good governance, and long-term national prosperity. Further, collaboration among the government, private sector, and academia is essential to develop skilled AI professionals and harness AI effectively while mitigating associated risks to achieve the *Viksit Bharat 2047* vision.

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# Digital Empowerment of Women and Its Significance for Viksit Bharat 2047

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## **Abstract**

The vision of Viksit Bharat 2047 aims to transform India into a developed, inclusive, and sustainable nation by the centenary year of its Independence. Achieving this vision requires the meaningful participation and empowerment of all sections of society, particularly women, who constitute nearly half of the population. In the contemporary digital era, digital technologies have emerged as powerful tools for empowerment by improving access to education, employment, financial services, healthcare, and governance. This paper examines the concept of digital empowerment of women and analyzes its significance in achieving the broader objectives of Viksit Bharat 2047.

The study highlights that digital empowerment goes beyond access to digital devices and internet connectivity and includes the development of digital literacy, skills, confidence, and the ability to use technology safely and effectively. Digitally empowered women are better equipped to attain economic independence, participate in the digital economy, access government welfare schemes, and engage in social and civic activities. The paper also explores the role of digital empowerment in promoting sustainable development through economic growth, social inclusion, and improved governance mechanisms.

The study concludes that digital empowerment of women is not merely a social goal but a strategic necessity for national development. Empowering women through digital means is essential for achieving inclusive growth, gender equality, and sustainable development, thereby playing a crucial role in realizing the vision of Viksit Bharat 2047.

**Keywords:** Digital Empowerment, Women Empowerment, Viksit Bharat 2047, Digital Inclusion, Gender Equality, Sustainable Development

## **I. Introduction**

India has set an ambitious and inspiring goal of becoming a developed nation by the year 2047, marking 100 years of its Independence. This national vision, known as **Viksit Bharat 2047**, emphasizes inclusive economic growth, social equality, technological advancement, and sustainable development (NITI Aayog, 2021). The success of this vision depends on the active participation of every citizen. Women, who constitute nearly half of India's population, play a decisive role in shaping the social and economic future of the country. Without empowering women, the dream of a truly developed India cannot be fully realized.

In recent years, digital technology has emerged as a powerful force of change in all spheres of life. The rapid expansion of the internet, smartphones, digital platforms, and e-governance services has transformed the way people access information, education, employment, healthcare, and financial services. In this digital era, technology is not only a tool of convenience but also a means of empowerment. For women, especially those from rural and marginalized backgrounds, digital access can reduce long-standing inequalities and open new pathways for personal and professional growth.

Digital empowerment of women goes beyond simply providing access to mobile phones or internet connections. It includes developing digital literacy, technical skills, and confidence to use digital tools safely and effectively for education, employment, entrepreneurship, financial inclusion, and participation in governance (OECD, 2018). Digitally empowered women are better informed, economically independent, and more capable of making decisions for themselves and their families. They can access online education, start or expand businesses through digital platforms, manage finances independently, and connect with government welfare schemes and public services.

From the perspective of **Viksit Bharat 2047**, digital empowerment of women is both a social necessity and an economic strategy. Empowered women contribute to higher productivity, improved family welfare, better health and education outcomes, and stronger community development. At the same time, women's participation in the digital economy strengthens innovation, entrepreneurship, and inclusive growth. Therefore, promoting digital empowerment of women is essential for building a resilient, equitable, and future-ready India.

This paper aims to examine the concept of digital empowerment of women, its role in enhancing women's socio-economic status, and its overall significance in achieving the objectives of **Viksit Bharat 2047**. The study also highlights the challenges faced by women in accessing and using digital technologies and suggests measures to strengthen digital inclusion for women in India.

## 2. Concept of Digital Empowerment of Women

Digital empowerment of women refers to the process of enabling women to access, understand, and effectively use digital technologies for improving their social, economic, and personal well-being. It is not limited to owning a mobile phone or having an internet connection; rather, it involves developing digital knowledge, skills, confidence, and the freedom to use technology meaningfully in everyday life (OECD, 2018). Digital empowerment helps women overcome traditional barriers and participate actively in the modern digital economy and society.

At its core, digital empowerment includes access to affordable digital devices, reliable internet connectivity, and basic digital infrastructure. However, access alone is not sufficient. Women must also be digitally literate, meaning they should be able to search for information online, use digital applications, communicate through digital platforms, and protect themselves from online risks. Digital literacy empowers women to make informed decisions related to education, health, finance, and employment.

Digital empowerment also plays a significant role in enhancing women's economic independence. Through digital platforms, women can acquire new skills, work remotely, engage in online businesses, and access wider markets for their products and services. Digital tools such as e-commerce platforms, digital payments, and online marketing enable women entrepreneurs, self-help groups, and small business owners to increase income and reduce dependency on intermediaries. This economic empowerment strengthens women's decision-making power within households and communities.

Furthermore, digital empowerment supports women's social and civic participation. Access to e-governance services allows women to benefit from government schemes, welfare programs, and public services without facing mobility or social constraints (Government of India, 2015). Digital platforms also provide women with a voice to express opinions, seek legal information, report grievances, and participate in community networks.

In addition, digital empowerment contributes to women's personal development and self-confidence. Exposure to digital knowledge and networks helps women challenge social stereotypes, build aspirations, and connect with role models beyond their immediate environment. When women are digitally empowered, they become active agents of change rather than passive beneficiaries of development.

Thus, the concept of digital empowerment of women is multidimensional, encompassing technological access, digital skills, economic opportunities, social inclusion, and personal agency. Strengthening these dimensions is essential for achieving gender equality and inclusive growth, which are central to the vision of **Viksit Bharat 2047**.

### 3. Viksit Bharat 2047: Vision and Objectives

The vision of **Viksit Bharat 2047** represents India's long-term national aspiration to become a fully developed, self-reliant, inclusive, and globally competitive nation by the year 2047, when the country will complete 100 years of Independence. This vision is guided by the idea that development should not be limited to economic growth alone, but should also ensure social justice, equality, sustainability, and improved quality of life for all citizens (NITI Aayog, 2021). The concept of Viksit Bharat emphasizes people-centric development, where progress is measured through human well-being, empowerment, and participation.

One of the core objectives of Viksit Bharat 2047 is achieving **inclusive and sustainable economic growth**. India aims to strengthen its economy by promoting innovation, digital transformation, skill development, and entrepreneurship while ensuring that the benefits of growth reach all sections of society, including women, rural populations, and marginalized groups (Government of India, 2015). Inclusive growth recognizes that women's participation in the workforce and digital economy is essential for enhancing productivity and national income.

Another important objective is **social empowerment and gender equality**. The vision of Viksit Bharat 2047 strongly aligns with the principles of equality, dignity, and equal opportunities for all. Empowering women through education, digital access, financial inclusion, and leadership opportunities is considered a key factor in achieving balanced and equitable development (Kabeer, 2016). Gender equality is not only a social goal but also a developmental necessity, as empowered women contribute positively to family welfare, education, health, and community development.

**Technological advancement and digital transformation** form a central pillar of the Viksit Bharat vision. The Digital India initiative and related programs aim to leverage technology to improve governance, service delivery, transparency, and citizen engagement (Government of India, 2015). Digital technologies are expected to bridge regional and social disparities by providing equal access to information, services, and opportunities. In this context, digital empowerment of women becomes critical to ensure that technological progress leads to inclusive development rather than widening existing inequalities.

Good governance and **citizen participation** are also key objectives of Viksit Bharat 2047. The vision promotes transparent, efficient, and accountable governance supported by digital platforms and e-governance systems. Active participation of citizens, including women, in decision-making processes strengthens democracy and policy effectiveness. Digital

empowerment enables women to access government schemes, voice grievances, and participate more actively in civic and political life (OECD, 2018).

Finally, the vision of Viksit Bharat 2047 emphasizes **sustainable and human-centered development**. This includes environmental protection, responsible use of resources, and long-term resilience. Empowered women play a crucial role in promoting sustainable practices related to health, education, nutrition, and environmental conservation at the household and community levels. Therefore, integrating women into the digital and development process is essential for achieving the broader objectives of a developed and sustainable India by 2047.

In essence, the vision and objectives of Viksit Bharat 2047 highlight that national development is deeply connected with human empowerment, technological inclusion, and gender equality. Digital empowerment of women emerges as a strategic and indispensable component in realizing this comprehensive development agenda.

#### **4. Role of Digital Empowerment in Women's Development**

Digital empowerment plays a vital role in the overall development of women by enhancing their access to opportunities, resources, and decision-making processes. In the modern digital age, technology acts as an important medium through which women can improve their educational levels, economic status, social participation, and personal confidence. Digital tools and platforms help women overcome traditional barriers such as limited mobility, lack of information, and social restrictions, thereby supporting inclusive and balanced development (OECD, 2018).

##### **4.1 Role in Education and Skill Development**

Digital empowerment has significantly improved women's access to education and skill development. Online learning platforms, digital classrooms, mobile applications, and open educational resources enable women and girls to continue their education regardless of location, age, or social background. Digital education is particularly beneficial for women in rural and remote areas, where access to quality educational institutions is limited. Through digital literacy programs and online skill courses, women can acquire employable skills such as computer operations, digital marketing, data handling, and technical services, which enhance their career prospects and self-reliance (Government of India, 2020).

##### **4.2 Role in Economic Empowerment and Employment**

Digital empowerment contributes directly to women's economic development by creating new employment opportunities and alternative

sources of income. Women can engage in remote work, freelancing, online services, and digital entrepreneurship using digital platforms. E-commerce websites, social media marketing, and digital payment systems allow women entrepreneurs and self-help groups to reach wider markets beyond their local communities. This reduces dependence on middlemen and increases income generation, thereby strengthening women's economic independence and bargaining power within households (World Bank, 2022).

#### **4.3 Role in Financial Inclusion**

Access to digital financial services is a major component of women's development. Digital banking, mobile wallets, online transactions, and Direct Benefit Transfer (DBT) systems have improved women's access to formal financial institutions. These digital services enable women to save money, receive government benefits directly, and manage finances independently. Financial inclusion through digital means increases transparency, reduces exploitation, and empowers women to make informed financial decisions, which positively impacts household welfare and long-term economic security (Government of India, 2015).

#### **4.4 Role in Health, Awareness, and Well-being**

Digital empowerment also supports women's health and well-being by improving access to health-related information and services. Through mobile health applications, telemedicine, and online awareness campaigns, women can obtain information related to maternal health, nutrition, sanitation, and mental well-being. Digital platforms help spread awareness about government health schemes and preventive healthcare, leading to better health outcomes for women and their families (World Bank, 2022).

#### **4.5 Role in Social and Civic Participation**

Digital platforms provide women with opportunities to participate more actively in social and civic life. E-governance services allow women to access government schemes, submit applications, and register grievances without facing mobility or social constraints. Social media and online forums enable women to express opinions, share experiences, and connect with support networks. Such participation strengthens women's voices in society and promotes democratic engagement and social inclusion (OECD, 2018).

#### **4.6 Role in Building Confidence and Leadership**

Digital empowerment contributes to women's personal development by enhancing self-confidence, awareness, and leadership abilities. Exposure to digital knowledge, success stories, and professional networks encourages women to challenge traditional gender roles and aspire for leadership positions. Digitally empowered women are more confident in decision-

making at household, community, and workplace levels, thereby contributing to overall societal development (Kabeer, 2016).

In summary, digital empowerment plays a multidimensional role in women's development by supporting education, economic independence, financial inclusion, health awareness, civic participation, and leadership. Strengthening digital empowerment initiatives for women is essential for achieving gender equality and inclusive growth, which are fundamental to the vision of **Viksit Bharat 2047**.

### **5. Digital Empowerment and Sustainable Development**

Digital empowerment plays a significant role in achieving sustainable development by promoting economic growth, social inclusion, and environmental responsibility in a balanced manner. Sustainable development focuses on meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. In this context, empowering women through digital technologies contributes directly to long-term and inclusive development outcomes (United Nations, 2015).

Digital empowerment supports **economic sustainability** by creating opportunities for women to participate actively in the digital economy. Through digital skills, online employment, and digital entrepreneurship, women can generate stable income and improve their standard of living. When women become economically independent, household income increases, poverty levels decline, and communities become more resilient. Digitally enabled women entrepreneurs also promote local production and innovation, which supports sustainable economic growth (World Bank, 2022).

Digital empowerment also strengthens **social sustainability** by promoting equality, access to information, and social inclusion. Access to digital education, health information, and government services helps reduce gender inequalities and social disparities. Digitally empowered women are better informed about their rights, welfare schemes, and social services, enabling them to participate more actively in family and community decision-making. This leads to improved outcomes in education, health, nutrition, and overall quality of life, which are essential components of sustainable development (Kabeer, 2016).

In addition, digital empowerment contributes to **environmental sustainability** by spreading awareness and encouraging responsible behavior. Digital platforms play an important role in sharing information related to environmental protection, clean energy, waste management, and sustainable consumption practices. Women, as primary caregivers and managers of household resources, can use digital information to adopt environmentally friendly practices and promote sustainability at the grassroots level. Digital

tools also reduce the need for physical travel and paperwork, thereby lowering carbon footprints and conserving resources (OECD, 2018).

Digital technologies further support sustainable development through **improved governance and service delivery**. E-governance systems enable transparent, efficient, and inclusive delivery of public services. Women can access government schemes, health services, and development programs through digital platforms, reducing time, cost, and dependency on intermediaries. Such digital inclusion enhances accountability and ensures that development benefits reach the intended beneficiaries, contributing to sustainable and equitable growth (Government of India, 2015).

From the perspective of **Viksit Bharat 2047**, digital empowerment of women is essential for building a future-ready and sustainable nation. When women are digitally empowered, they become active contributors to economic growth, social well-being, and environmental protection. Therefore, integrating digital empowerment strategies with sustainable development goals is crucial for achieving a balanced, inclusive, and developed India by 2047.

## **6. Challenges in Digital Empowerment of Women**

Despite rapid digital progress in India, the digital empowerment of women continues to face several deep-rooted and interconnected challenges. One of the most critical issues is the **digital divide**, which reflects unequal access to digital devices, internet connectivity, and technological infrastructure. Women, particularly those living in rural, tribal, and economically weaker regions, often do not have personal ownership of smartphones or computers. Poor network coverage and unreliable internet services further restrict their ability to access online education, employment opportunities, digital banking, and e-governance services (OECD, 2018).

Another significant challenge is **limited digital literacy and technical skills among women**. Many women lack basic knowledge of using digital devices, applications, and online platforms. This problem is more pronounced among older women, women with low educational attainment, and those who have had little exposure to technology. Inadequate training facilities, lack of awareness about digital learning programs, and fear of making mistakes online reduce women's confidence in using digital tools. As a result, women often depend on family members or intermediaries, which weakens the empowering impact of digital technologies (Government of India, 2020).

**Socio-cultural and gender-based barriers** continue to restrict women's digital participation. Patriarchal social norms, gender stereotypes, and traditional household responsibilities often limit women's access to digital devices and time for learning digital skills. In many families, the use of

mobile phones and the internet by women is closely monitored or discouraged due to concerns related to social norms and safety. Such restrictions prevent women from fully utilizing digital platforms for education, entrepreneurship, and self-expression, thereby reinforcing gender inequalities (Kabeer, 2016).

Issues related to **online safety, privacy, and cyber security** present another major obstacle to women's digital empowerment. Women are more vulnerable to online harassment, cyberbullying, identity theft, and digital fraud. Fear of misuse of personal data, lack of knowledge about cyber laws, and limited access to grievance redressal mechanisms discourage women from actively engaging with digital platforms. These concerns not only affect women's participation but also reduce their trust in digital systems (World Bank, 2022).

Inadequate **digital infrastructure and institutional support** further hinder women's digital inclusion. Many rural and remote areas suffer from poor internet connectivity, lack of electricity, and limited availability of digital service centers. Additionally, there is a shortage of women-focused digital training programs, mentorship opportunities, and technical support systems. Without continuous support and capacity-building initiatives, women find it difficult to sustain their engagement with digital technologies (Government of India, 2015).

Economic constraints also play a crucial role in limiting digital empowerment. High costs of digital devices, internet data plans, and skill training programs make technology unaffordable for many women from low-income households. Since women often have limited control over financial resources, investing in digital tools is not always prioritized. This economic barrier deepens digital exclusion and reinforces existing social and economic disparities.

Overall, these challenges indicate that digital empowerment of women requires more than technological advancement alone. A comprehensive and gender-sensitive approach is needed to address issues related to access, affordability, literacy, social norms, safety, and infrastructure. Overcoming these barriers is essential for ensuring that women can fully participate in the digital economy and contribute effectively to inclusive growth and sustainable development under the vision of **Viksit Bharat 2047**.

## **7. Way Ahead**

To strengthen the digital empowerment of women and align it effectively with the vision of **Viksit Bharat 2047**, a comprehensive, inclusive, and gender-sensitive approach is required. While several initiatives have been introduced, sustained efforts and policy refinements are essential to ensure that digital empowerment reaches women across all regions, social groups, and economic backgrounds.

First and foremost, there is a need to **expand and strengthen digital infrastructure**, especially in rural, remote, and underserved areas. Reliable internet connectivity, uninterrupted electricity supply, and access to affordable digital devices are the basic foundations of digital empowerment. Special focus should be given to regions where women's digital access remains limited, ensuring that no woman is excluded from the digital ecosystem due to geographical or infrastructural constraints.

Enhancing **digital literacy and skill development among women** should be a top priority. Large-scale, community-based digital literacy programs must be designed in simple and local languages to ensure maximum participation. Training should not only focus on basic digital skills but also on advanced and job-oriented skills such as digital marketing, data management, online financial services, and emerging technologies. Encouraging lifelong digital learning will help women adapt to the changing demands of the digital economy.

Addressing **socio-cultural barriers** is equally important for sustainable digital empowerment. Awareness campaigns involving families, communities, and local leaders should be promoted to challenge gender stereotypes and encourage supportive attitudes toward women's use of technology. Creating safe and inclusive digital spaces will help women gain confidence and freedom to participate actively in online platforms without fear or restriction.

Ensuring **cyber safety and digital security for women** is another crucial area for future action. Strengthening legal frameworks, improving grievance redressal mechanisms, and increasing awareness about cyber laws and safe online practices are essential to protect women from digital threats. When women feel secure online, their participation in digital platforms for education, employment, and governance will increase significantly.

Promoting **women-centric digital entrepreneurship and innovation** can further accelerate women's economic empowerment. Providing access to digital finance, credit facilities, mentoring, and market linkages will enable women entrepreneurs and self-help groups to scale their businesses. Public-private partnerships can play a vital role in supporting women-led digital enterprises and encouraging innovation at the grassroots level.

Finally, continuous **monitoring, evaluation, and policy integration** are necessary to ensure the effectiveness of digital empowerment initiatives. Gender-disaggregated data should be used to assess progress and identify gaps in implementation. Integrating digital empowerment goals with broader development policies related to education, health, employment, and sustainability will create a holistic development framework.

In conclusion, the way ahead for digital empowerment of women lies in building an enabling digital ecosystem that combines access, skills, safety, and social support. Empowered women are key drivers of economic growth, social transformation, and sustainable development. Strengthening digital empowerment initiatives will not only uplift women but will also significantly contribute to achieving the inclusive and progressive vision of **Viksit Bharat 2047**.

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# Multilingual Creativity through Regional Folk Languages: Himachali Folk Literature

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## **Abstract**

Folk traditions function in their most absolute state with the use of distinctive vernaculars and regional dialects. These forms of communication are critical for the dissemination of folk customs, moral lessons and traditional wisdom. The folk traditions of Himachal Pradesh's regional dialects (Kangri, Mandeali, Kinnauri, Chambeali, Sirmauri) comprise a contemporary repository of the ecological, ethical and historical wisdom which is central to the vision of Viksit Bharat 2047. In Himachal Pradesh we see that folk stories and songs are passed down and presented within native communities via a variety of dialects which in turn define meaning, performance and collective identity. As Alan Dundes argues folklore can only be fully understood when studied within its linguistic and cultural context making regional languages central to folk creativity rather than peripheral. As India strives toward becoming Viksit Bharat, we need to remember that development goes beyond just new roads and better jobs we must also support and protect our diversities in language and culture. The National Education Policy (NEP) 2020 guides us in this direction as it emphasizes learning in one's mother tongue, multilingualism and the teaching of local, traditional knowledge. The NEP 2020 encourages translation and scholarship in the regional languages as well as creative work and innovation based on local traditions. As a result it has revitalized a number of folk literary traditions that had been neglected even in academic circles. This paper looks at how Himachali folk literature plays a role in multilingual creativity which at the same time preserves regional languages' diversity and at the same time transforms the present day educational and cultural settings. The inclusive production of knowledge supports the Viksit Bharat 2047 vision of a developed nation which is culturally sustainable and linguistically diverse. The protection of regional languages not only preserves the folk traditions but also enhances the cultural identity and inclusive knowledge

production. The Viksit Bharat 2047 vision fosters the development of culturally sustainable and linguistically diverse India.

**Keywords:** Himachali Folk Literature, Regional Languages, Multilingual Creativity, NEP 2020, Cultural Heritage, Viksit Bharat 2047

### **Introduction**

In today's time we cannot measure development solely on the basis of the GDP, infrastructural development or technological advancement, development goes beyond just new roads and better jobs we must also support and protect our diversities in language and culture. Many countries today are also evaluated based on the preservation of cultural diversity, the promotion of social inclusion and the sustenance of indigenous knowledge. India's developmental vision of Viksit Bharat 2047 outlines the road map of a developed nation which is economically strong and culturally rooted.

For India, the year 2047 has a very special place in its developmental story which is that of a hundred years of independence, this serves not only as a numerical target but as a guiding milestone for assessing the kind of nation India seeks to become after a century of self-governance. The vision of Viksit Bharat 2047 goes beyond economic growth and infrastructure expansion; it also calls for reflection on what kinds of knowledge, language and cultural memory we want to see in the future national identity (Government of India, 2020). Multilingualism is essential because the generation that will shape India in 2047 is the same generation currently being educated under the National Education Policy 2020 which acknowledges the importance of local/ regional languages and local knowledge systems for equitable development (Government of India, 2020). The policies being implemented today will shape the vision of Viksit Bharat by 2047.

Consequently, the preservation of the Himachali folk literature and the other folk traditions of the Indian states is part of this broader developmental vision, as the most genuine/authentic knowledge of a particular region which includes its ecological memory, oral histories, ethical values and cultural heritage is often the one that is the most fully preserved within its regional dialects, individual idiolect and languages (Dundes, 1989).

This vision of development is also inclusive of reforms in education, empowerment, sustainability and the preservation of cultural heritage. Languages are important in this scenario. Despite being one of the most linguistically rich countries in the world, India continues to lose many regional languages and dialects. Himachal Pradesh is rich in culture but several of its dialects are still poorly documented. The folk literature in these dialects lives on mainly through oral traditions.

This paper presents that what we see in Himachali folk literature is a growth of multilingual creativity which is more than just cultural nostalgia. When the regional languages are given recognition and are appreciated, they can be of great significance in empowering educational inclusion and knowledge diversity, which is in line with the Viksit Bharat 2047 vision.

### **Background**

Folk literature is a very old form of human expression. Before we had written documents and print culture, communities all around the world kept to themselves their histories, beliefs and moral codes through oral stories, songs, myths and ritual performances. Folk literature grew out of a collective cultural practice as opposed to the work of a single author. It was a product of memory, performance and community participation.

Before formal literary traditions, folk literature existed and functioned as an early system of knowledge, social values, survival techniques and cultural norms (Dundes, 1989). It worked on multiple levels as an education system, as a religion and as an entertainment system. Folklorist Alan Dundes also put forth that folklore is to be studied in its cultural and linguistic setting in which the local language, symbolism and performance carry the meaning. When folklore is taken out of its original linguistic setting layers the meaning may be lost. Thus, local language is not a background medium but a primary element of folk expression.

Scholars in India have in particular pointed out the social importance of these folk traditions. For instance, Dr. Karan Singh, (folk literature researcher) describes folk literature as the "living voice of the people" and a reflection of the rural social life, the social ethics and the collective memory. He emphasizes that folk traditions also help in the cultural continuity of a society that is in a state of rapid modernization and therefore, such traditions deserve to be preserved as an outdated intellectual resource and not be considered primitive and worthless. Such sentiments correlate with present cultural studies that treat folklores as systems of knowledge.

In the Indian setting, Himachal Pradesh serves as an excellent case study of rich folk traditions. It has a mountain terrain, very isolated communities and a robust tradition of rituals that over time have worked to protect oral heritage. In terms of literature, we see that it includes ballads, devotional songs, local deity stories (devta traditions), seasonal songs, folk tales, proverbs and riddles. Also these traditions travel through dialects such as Kangri, Mandeali, Kinnauri, Chambeali, and Sirmauri. Every dialect encapsulates the unique history and experiences connected to a particular region with respect to farming, migration, weather and spirituality. For instance, a lot of Himachali folk songs center around the themes of the harvest

cycle, snowfall and pastoral life and these songs reflect a close relationship with the environment.

Today we see that modern migration and formal education which puts forth the dominant languages has reduced the use of other dialects. We also see that Himachali folk literature is very little documented and at risk of fading. What we have is only an oral tradition against the classic or written literary traditions which passes down from one generation to the next. In the context of India's developmental agenda this is a cause of concern. This gives rise to a question that in today's time and in the near future can a country like India truly be developed if the folk traditions which hold in them the local memory and cultural identity of that place fade away? If these folk traditions will perish they will take away with them the whole cultural memory. Thus preserving folk literature is more than just a matter of cultural sentiment it is about protecting linguistic diversity and indigenous knowledge.

### **Multilingualism as a Developmental Resource**

Multilingualism fosters cognitive flexibility, creativity and empathy. The study illustrates that the meaning of folklore is inextricably linked to its linguistic context (Dundes,1989) and that multilingualism boosts one's cognitive and social inclusiveness (Bialystok 2011).Multilingualism is a lived social reality in India and its promotion strengthens democratic inclusion. When individuals have the opportunity to learn in their mother language, educational participation is enhanced.In Himachal Pradesh and in many other parts of India we see multi language communities that easily shift between different dialects,individual idiolect,Hindi and also English. This kind of linguistic diversity is a strength and reflection of the cultural wealth.

### **Folk Literature as an Indigenous Knowledge**

In Himachal Pradesh's folk literature consists of great ecological wisdom. Many of the folk stories from these traditions talk about the results/ consequences of forest destruction and river pollution. Through these stories what we also see a promotion of sustainability which is a goal of Viksit Bharat 2047. Through the use of stories, songs, proverbs and oral narratives that are handed down in regional dialects in which communities live they pass on information about the environment, agricultural practices and social values. These traditions also mirror the daily life in the local areas as well as play a significant role in the maintenance of cultural memory and linguistic diversity from one generation to another (Dundes,1980; Handa, 2010).

### **NEP 2020, Viksit Bharat 2047 and Multilingual Education**

The National Education Policy (2020) puts out that which education in children's mother tongues be provided, also that folk knowledge be

translated and a system of documentation put in place which we see to include digital archiving, community storytelling and integration in the curriculum. It also brings out that which goes to say that it supports:

Teaching the children in their native languages.

- Teaching of folk knowledge
- Translation activities
- Documentation of culture

By this way of cultural sustainability we put our economic and technical growth frameworks that local dialects are preserved at the core of our inclusive and human centered development. The policy shift recognizes the value of regional languages. Learning in culturally familiar contexts enhances the children's confidence and understanding. In the case of Himachal Pradesh, this can be done by using folk tales in the curricula and encouraging the documentation of research.

In the NEP 2020 we see the government's push for multilingualism. Some Indian Universities also play an important role in the introduction of Indian languages into the curriculum and creating institutional spaces for regional language studies. For example, University of Delhi offers Ability Enhancement Courses (AECs) within the Undergraduate Curriculum Framework (UGCF) where students can study Indian languages and regional literatures. Such institutional support shows that multilingual policy is increasingly being implemented in the educational practices. Though many regional languages still don't have a place in the present formal curriculum but we can see the start of a trend which is towards the addition of greater number of languages.

In Himachal Pradesh, multilingualism is an integral part of everyday life as people use local dialects such as Kangri, Mandeali, and Kinnauri at home; shift to Hindi in public communications and use English in their educational and professional engagements. In contrast to the widespread use of a monolingual practice in big cities and their globalized culture, multilingualism in Himachal Pradesh is a part of the socio-cultural tradition of the community. For instance, in multilingual homes, families may use Kangri at home, while in the community gatherings they may use Hindi and for formal communications or education they may prefer English. The use of several languages as a social and community practice does not erase cultural identity it in fact reinforces it. In this case, we see how the various spoken languages in the region contribute to the success of the regional folk literature. The flexibility and vitality of folk traditions is evident in the continued use and interaction of varied languages. Yet, the case for the protection of dialects

is equally strong, as they embody the unique cadence, metaphors and cultural imagery of the folk narratives. Within the vision of Viksit Bharat 2047 the recognition of multilingualism in Himachal is an indication that development does not have to come at the cost of linguistic diversity. In this sense, multilingualism in Himachal Pradesh is an affirmation of the cultural ecosystems that sustain folk literature and the unassailable place of regional narratives in the national narrative of India.

Challenges in documentation of most Himachali dialects is that they have no standard scripts. Local wisdom is recorded in the memory of the elders. As the elders' generation pass away, the knowledge is likely to be lost forever. Documentation must include:

- Community video recordings
- Video storytelling
- Academic Documentation
- Digital Community Archiving
- Digital Video

Community storytelling folk traditions will cease to exist in the absence of documentation. Folk traditions can be renewed and digital technology can be used to document YouTube channels, Digital Podcasts, and Digital Community Archives. Young people can take the initiative to document and record the stories of the elders. This will be an inter-generational approach and will create cultural pride. It will be in the framework of the Viksit Bharat 2047 vision, supporting creative industries.

### **Inclusive Knowledge Production**

Academic discourse in the past tended to benefit the dominant and standard languages, particularly English or large scale national languages which in turn has marginalized regional and local dialects. This language based hierarchy also determines what we consider to be valid knowledge which in great part leaves out oral histories, folk tales and indigenous knowledge. As a result many community based knowledge systems are left out of what we put forth in the formal academic setting. This not only lessens the variety in academic work but also pushes away from the academic discourse the social experiences of large groups.

Considering regional literature is an important part of the process of democratizing scholarship. When universities and research institutions deal with regional languages they signal an understanding that knowledge is not solely mapped to the metropolitan or the dominant languages but also to the peripheries, the rural and the communities. The rural folk songs, stories and oral histories carry the historical memory, the ethics and the eco-criticism of

the communities which are important to all the disciplines. Studying these and integrating them into academic discourse, reshapes the parameters of scholarship, literature, history and knowledge.

In the field of knowledge production which we may term inclusive is that which puts forward marginalized voices. Many folk traditions are kept alive by women, rural communities and indigenous groups which in turn are often left out of main stream stories. We document and study these traditions which in turn brings to light their real lives and intellectual input. This is not just about preservation but about recognition and respect. Within the vision of Viksit Bharat 2047 which is our national push for social equity and participatory development, inclusive knowledge production is very much at the core. A developed nation is not only to be seen in terms of it's technology but also in terms of it's intellectual inclusivity. As we see regional languages and folk traditions take center stage in academic and policy discourse there is a development of a more representative knowledge system. This inclusion helps to build cultural self assurance and also puts forth the diverse thoughts and shows that developmental changes address the concerns of all groups and not just the privileged ones. From this point of view the study of Himachali folk literature and of other under researched state's literature in the academic setting is a step towards a more just and culturally based model of national progress.

### **Conclusion**

The strength of Himachali folk literature exemplifies the intertwining of language, creative power and cultural identity. Creative expressions in oral forms and folk literature are dynamic systems of knowledge. They reveal how societies archive their histories, understand their surroundings and define their social values. The small languages and the literature should not lead to their disposal. Complete loss of them is the loss of an entire cultural worldview. The regional languages should not be seen as barriers, but as cultural and intellectual resources that contribute to the diversity of the country. The multilingual innovation and creativity that emerges from folk literature is of great importance to social cohesion, cognitive flexibility and cultural confidence.

Sustainability of development and maintenance of human centered growth is achieved when we protect local identity. The language diversity is a great asset for the success of sustainable development. The National Education Policy 2020 has put us on the right path which is to promote the use of mother tongue in instruction, multilingual education and also the support of local knowledge. But policies by themselves are not sufficient for true community preservation we requires community action, which we may

term as pro active record keeping, inter generational practices and youth engagement in digital media and art. When local community members, teachers and the education structure works together we see that folk traditions live on and do not fade away into mere museum pieces. As we aim for Viksit Bharat 2047 economic and technological growth also has to include cultural conservation and inclusive empowerment. A developed nation is a one which protects and values its many voices and intangible heritage, which in turn does not see progress at the expense of memory and identity. Thus the preservation of Himachali folk literature is more than just upholding the cultural values it is about realizing the region's developmental potential. Through the promotion of multi linguistic and creative regional traditions, India can strengthen the inclusive national development.

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# From Oral Stories to Digital Spaces: Folk Literature and Cultural Identity in Contemporary India

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## **Abstract**

Folk literature in India has been a part of daily life for as long as we know in the tales we hear at home, in the songs we sing, in the festivals we celebrate, in local practices which we pass on from one generation to the next. As India looks to the vision of Viksit Bharat 2047 we see that development is not just in the fields of technology and infrastructure but also in the effort to preserve our cultural past. This paper looks at how folk literature is finding a ways in digital spaces like online archives, educational platforms, social media and visual storytelling. For many young people today digital platforms are the first in which they see folk stories. As traditional narratives go into these spaces we see the gap between the past and present begin to close which in turn makes cultural information more accessible.

The paper also reveals concern over who has authority over these narratives and their online representations. Integrating folk literature into the broader vision of Viksit Bharat 2047, the author posits that a developed nation should also be culturally developed; its education system, active youth, and digital technology must be integrated to perpetuate and reinforce living traditions.

**Keywords:** Folk Literature, Digitalisation, Cultural Heritage, Youth and Education, Viksit Bharat 2047

## **Introduction**

Folk literature does not exist as an academic category in India, but rather, it is a daily life. It is found in the narrations of the old, in the tune of harvest-songs, in the myths of the deities of the place, and in the plays acted at fetes. The importance of these traditions does not simply lie in the fact that they can be regarded as entertainment, but they assist the communities to comprehend their world, relationships, values, and fears. Even nowadays, oral storytelling is still practiced through the methods of educating children,

resolving disputes, preserving the history of a place, and ensuring social peace in many rural communities.

However, with the entry of India into the era of the fast paced technological transformation, concepts of development are growing as well. The development now is no longer regarded solely through the prism of infrastructure, growth or digital economy. Cultural development has also been made significant. An advanced country should also be a country that has a lot of knowledge of where it originated, has strong narrations and can transmit it to the generations that will come after them in formats that they comprehend.

Digital platforms, which were initially viewed as the modern and tradition-disruptive, have become the means of cultural perpetuation. A folk tale is often the first experience of many Indians who are young enough, and it happens via an animated video on YouTube, a reel, or a digital library in a classroom. This means that technology is not replacing tradition, but is emerging as a new avenue to make tradition survive.

The transformation of oral memory to the digital archives is a big one. It holds some questions of ownership, authenticity and representation. It also forms the chances to retain thousands of local traditions that otherwise would have been lost. This paper discusses these changes, how folk literature is moving to the online space and implementing the argument that the digital world is a new type of cultural infrastructure that can aid in the developmental interests of India at large.

### **Review of Literature**

Indian folk literature has been mainly studied in terms of oral tradition, performance, community and regional diversity. Such scholars as Karan Singh (1995) have pointed out that folk performance in North India, i.e. Nautanki, Swang, Bhavai, or Maach, is inextricably linked with social life. These traditions according to Singh flourish not due to written texts but by way of being enacted in communal areas. The meanings of folk narratives are the emotional relationship of the audience and the performer. It is particularly significant in his work when it comes to the issue of digitalisation as it reveals the extent to which the environment of a single folk performance is culturally specific. Part of this context is inevitably changed when such performances are transferred to the online version.

The tension between the folklore and modernity has been studied by the later researchers.

Sharma (2021) states that now young viewers perceive culture using the digital stories, podcasts, short films, and animation. Digital media does not destroy tradition, rather it is a new terrain where the tradition will change.

Such concept can be applied to explain why folk literature is acquiring a new life on such platforms as YouTube or Instagram.

The urgency of preservation is also emphasized in studies of digital humanities. According to the National Digital Library of India (2022), a large number of folk manuscripts, cassettes, and handwritten notes in the archives are disintegrating rapidly. Thousands of local tales are likely to disappear without online conservation. Singh (2020) also notes that intangible heritage or songs, rituals, oral tales are more at risk than written texts. Digital recording, thus, turns out to be not only efficient but also necessary.

Cultural authority and ethics is studied by some scholars. Who gets to upload a story? What should be done to ensure that the communities are not misrepresented? Ignace (2018) cautions that online folklore may reduce or commercialise folklore to adapt it to internet users. Nevertheless, Ignace also admits that digital platforms may also empower local communities by handing them the keys to control their narratives.

There is a recent literature that links digital culture and national development. These researches indicate that the development of a country also encompasses cultural strength, multilingualism material, youth engagement and availability of heritage. In this case, Viksit Bharat 2047 is a concept that fits perfectly well. A culturally proud India should also be able to maintain its narratives not only as a source of pride, but also as a source of learning, social unity and world identity.

Collectively these studies demonstrate three overall trends:

1. Folk literature is grounded in the community life and performance (Karan Singh).
2. Young people now place their cultural life within the digital platform (Sharma).
3. The major issues that are raised during the digital age are preservation, ethics, and accessibility (Ignace; NDLI; Singh).

This literature can make us appreciate why folk literature digitisation is not merely a technical change but a cultural change that is associated with the vision of the Indian development.

### **The Folk Literature as a Living Cultural Memory.**

The folk literature has never been out of the community and has existed among them. It includes:

- folktales told in homes
- ‘ wandering song by the balladeers.
- ‘ local epic like Pandavani, Maach, Bhavai or Jatra.
- ‘ religious songs and ceremonial stories.

- local folklores dedicated to specific locations.

These traditions, as Karan Singh (1995) points out in *Folk Theatre of North India*, cannot be separated with the social life of villages and small towns. They serve as amusement, learning, morality and emotional attachment. The narrator or actor does not portray a professional writer but a member of the community. Memory was relied on in the old days to preserve. This rendered folk traditions adaptable and imaginative as well as susceptible to the loss by alteration of communities or migration.

### **Digital reinterpretation of the folk narratives.**

#### Digitalisation and the New Cultural Landscape:

Today, folktales and performances are no longer limited to the village square or family gatherings. Digital technology has created:

- online storytelling channels
- YouTube folk performances
- digitised folk manuscripts
- social media pages for regional tales
- educational apps that teach folk songs or local histories
- digital archives maintained by universities and NGOs

For many children and young adults, these online platforms are the first place where they encounter folk stories. Digital spaces have become cultural classrooms.

#### 1. Online Archives and Libraries

Institutions such as the National Digital Library of India, Indira Gandhi National Centre for the Arts (IGNCA), and university archives have begun digitising rare folk recordings, photographs, and texts. Digitisation ensures that fragile materials—old tapes, notebooks, folk manuscripts—do not disappear due to decay.

#### 2. Social Media and Popular Culture

Instagram reels of Baul singers, YouTube videos of Lavani performances, or animated Panchatantra stories on children's apps have opened folk literature to millions. These platforms make folk culture part of everyday digital consumption.

#### 3. Digital Storytelling and Animation

Short animated folktales, graphic-style retellings, and interactive storytelling platforms help youthful audiences connect to old stories in a language they understand. This is essential for cultural continuity in a rapidly modernising society.

### **Folk Literature and Viksit Bharat 2047.**

The concept of Viksit Bharat focuses on development that is:

- economically strong
- technologically advance
- socially inclusive
- culturally rooted

To develop culturally, India has to retain the traditional knowledge systems in parallel with the contemporary scientific advancement. Cultural Infrastructure: Digital Preservation. Similar to how roads and data centres are an infrastructure, digital archives and cultural content platforms are a kind of a cultural infrastructure. They make sure that the heritage of the citizens is available to them. This is incorporated in the vision of 2047 when it comes to nation-building. Digital Culture, Youth, and Education. The youth are becoming more and more aware of identity based on digital content. When folk literature is exposed to their digital environment, it makes them remain connected with their roots as they navigate the environment of globalisation.

Digital folk literature would be able to support:

- school curricula
- heritage education
- language preservation
- moral learning and environmental learning
- cultural pride

Therefore, digital folk spaces enable young people to be contemporary and established. Cultural Credibility and Global Availability. Japan, Korea, and China are some of the countries in the world that export their folk culture using the digital media as soft power. The same is the case with India, which has a rich folklore heritage. This is in line with digitalising folk literature since it makes the Indian culture accessible all over the world.

### **Concerns and Challenges**

Even though digitalisation brings about possibilities, it also creates questions.

Who Controls the Narrative?

Conventional narratives are usually not of individual persons. Once posted on the internet, property ownership is lost. Business sites can transform or streamline stories without societal approval.

**Loss of Performance Context** According to Singh (1995), folk theatre is closely connected to the geographical location of the village, dialects, and the cultural practices. The atmosphere, interaction and the communal meaning are not completely present in online videos. **Authenticity vs. Adaptation** Online versions tend to update stories, include animation, or change the endings so that they make sense to the online audience. This may be imaginative and dangerous. **Language Loss** Digitisation can benefit the smaller languages such as Hindi or English, leaving the smaller dialects aside.

Ethical guidelines, community engagement, and cultural sensitivity are needed to conquer these challenges.

### **Branding the Bridge Between Past and Present.**

Nevertheless, there is one thing that can be understood: digital platforms successfully reunite people with the traditions they might have forgotten. The intergenerational divide is becoming less in the distance. The tales of grandmothers, which were restricted by the domestic environment, are now accessible to millions of people. Digitalisation forms a mutual cultural field whereby the past and present are able to co-exist. It enables the youths both in the metros and others in foreign countries to reach their cultural origins any time they wish.

### **Case Studies**

1. **Electronic Recreations of North Indian Folk Theatre.** Nautanki and Swang performance documenting projects are based on traditions being discussed by Karan Singh. Their form, humour, musical patterns, and social value, which he analysed, make these art forms digitalised in a responsible way by researchers.

2. **Folk Tales in Teaching Applications.** Mobile applications such as Baal Katha, Moral Stories for Kids, and government-supported online libraries have folktales in the regions to aid the teaching of values in schools.

3. **Social Media YouTube Channels.** The Gond, Bhil, and Kumaoni have operated the channels in which the elders share their stories using their native dialects, combining the oral memory with the digital media.

### **The Digital Folklore and the Formation of Identity.**

Algorithms have as much influence on identity today as families. Once folk literature is introduced to such algorithmic spaces, it becomes a component of the way individuals perceive themselves.

To have a culturally assured India, this is a necessity. Digital platforms:

- encourage multilingualism
- strengthen the regional identities.
- sell Indian arts across the world.

- develop accommodative stories.

They enable India to retain diversity and at the same time adopt modernity.

### **Towards a Culturally Developed India.**

An India with a culturally developed country is that with: • but folk traditions are not neglected.

- young people identify with the past.
- education covers local knowledge. culture and technology co-exist.
- cyberspace fosters, rather than obliterates identity.

Digitisation is not merely a technical procedure, but it is a cultural task.

### **Conclusion**

The folk literature has been the spirit of India. By making it digital it means that this spirit will be carried into the following century. With India striving to achieve the objectives of Viksit Bharat 2047, the need to conserve and modernise folk traditions is an important aspect in the process of cultural development. The community participation, education, involvement of youth and technology should collaborate to build on this cultural base. With the oral memory being converted into the form of digital archives, India is not only preserving stories, it is preserving the emotional and cultural strands upon which the people of India are tied to the past, direct them into the present and prepare them towards the future.

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# Renewable Energy and a Sustainable Future

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## **Abstract**

Escalating environmental challenges, rising energy demand, and growing concerns over climate change have intensified the global shift towards renewable energy systems. Renewable energy sources, including solar, wind, hydropower, biomass, and geothermal energy, provide viable alternatives to fossil fuels by lowering carbon emissions, enhancing energy security, and supporting sustainable development. This review paper critically synthesises contemporary literature on renewable energy technologies, their contribution to environmental, economic, and social sustainability, policy and institutional mechanisms, and future transition pathways. By consolidating global insights with perspectives relevant to developing economies, the study offers a nuanced understanding of how renewable energy can underpin a resilient and sustainable future.

**Keywords:** Renewable energy, sustainable future, energy transition, climate mitigation, green development

## **Introduction**

The availability and use of energy are closely linked with economic progress, industrial expansion, and societal welfare. Historically, global energy systems have relied heavily on fossil fuels, a dependence that has resulted in severe environmental externalities such as greenhouse gas emissions, air pollution, and ecological degradation. These consequences have prompted policymakers, researchers, and industry stakeholders to seek cleaner and more sustainable energy alternatives.

Renewable energy encompasses energy derived from naturally replenishing resources, including sunlight, wind, water, organic matter, and geothermal heat. Unlike conventional energy sources, renewables offer long-term environmental benefits and align with global sustainability objectives. This review aims to examine the evolving role of renewable energy in achieving a sustainable future by analysing technological developments, sustainability linkages, socio-economic outcomes, policy frameworks, and emerging challenges.

## **Renewable Energy and the Dimensions of Sustainability**

Sustainability is commonly conceptualised through three interconnected pillars: environmental protection, economic viability, and social equity. Renewable energy contributes to each of these dimensions in distinct yet complementary ways. From an environmental perspective, renewable energy systems significantly reduce carbon emissions and dependence on exhaustible resources. Economically, they support long-term cost stability, reduce exposure to fuel price volatility, and stimulate innovation and employment within green industries. Socially, renewable energy enhances energy accessibility, improves public health outcomes by lowering pollution levels, and contributes to inclusive development, particularly in underserved regions. The integration of renewable energy within development strategies therefore represents a holistic approach to sustainability.

### **Major Renewable Energy Technologies**

#### ***Solar Energy***

Solar energy technologies convert sunlight into usable energy through photovoltaic modules and solar thermal systems. Continuous reductions in technology costs, combined with efficiency improvements, have positioned solar power as one of the most rapidly expanding energy sources worldwide. Its modular nature enables both large-scale grid applications and decentralised systems, making it especially relevant for rural and off-grid electrification.

#### ***Wind Energy***

Wind power utilises atmospheric motion to generate electricity via wind turbines installed onshore and offshore. Advances in turbine design and forecasting technologies have improved capacity factors and reliability. Wind energy is widely recognised for its cost competitiveness and scalability, although issues related to land use, noise, and ecosystem impacts require careful planning.

#### ***Hydropower***

Hydropower harnesses the kinetic and potential energy of flowing water and remains a major contributor to global renewable electricity generation. It offers operational flexibility and supports grid stability. Nevertheless, the ecological and social implications of large dams, including biodiversity loss and population displacement, necessitate sustainable planning and management approaches.

#### ***Biomass Energy***

Biomass energy is produced from organic materials such as agricultural residues, forestry by-products, and biodegradable waste. When sustainably

managed, biomass can support waste reduction and rural livelihoods. However, concerns regarding land-use change, food security, and emissions from inefficient combustion highlight the need for advanced technologies and regulatory oversight.

### ***Geothermal Energy***

Geothermal energy exploits thermal energy stored beneath the Earth's surface for electricity generation and direct heating applications. It provides a stable and low-emission energy supply, though its deployment is geographically constrained to regions with favourable geological conditions.

### **Contribution of Renewable Energy to Climate Change Mitigation**

The energy sector accounts for a substantial share of global greenhouse gas emissions. Expanding the share of renewable energy in electricity generation, transportation, and industry is therefore central to climate mitigation strategies. Renewable energy adoption supports emission reduction targets by replacing carbon-intensive fuels and enabling electrification across sectors. Coupled with energy efficiency measures and storage solutions, renewables play a pivotal role in advancing low-carbon development pathways.

### **Socio-Economic Implications of Renewable Energy Deployment**

Beyond environmental benefits, renewable energy systems generate wide-ranging socio-economic impacts. Investment in renewables creates employment across value chains, including manufacturing, construction, operations, and maintenance. Localised energy systems contribute to regional development, while improved access to clean energy enhances education, healthcare delivery, and income-generating activities. These outcomes position renewable energy as a catalyst for inclusive and sustainable economic growth.

### **Policy and Institutional Support for Renewable Energy**

The pace of renewable energy adoption is strongly influenced by policy and institutional frameworks. Instruments such as financial incentives, regulatory mandates, carbon pricing, and public-private partnerships have been widely employed to accelerate clean energy transitions. International cooperation and multilateral initiatives further facilitate technology transfer, capacity building, and knowledge sharing, particularly for emerging and developing economies.

### **Key Challenges in the Renewable Energy Transition**

Despite substantial progress, several barriers continue to hinder large-scale renewable energy deployment. These include the intermittent nature of certain renewable sources, limitations in energy storage and grid

infrastructure, high upfront capital requirements, and policy uncertainty. Additionally, environmental and social concerns associated with large renewable projects must be addressed through inclusive planning and stakeholder engagement.

### **Future Research Directions and Opportunities**

Future renewable energy systems are expected to benefit from advancements in energy storage, smart grids, digital technologies, and hybrid energy configurations. Integrating multiple renewable sources can improve system reliability and efficiency. Further research is required to explore policy effectiveness, behavioural aspects of energy adoption, and context-specific transition pathways that align sustainability objectives with local development needs.

### **Conclusion**

Renewable energy represents a fundamental pillar of a sustainable future, offering solutions to environmental degradation, energy insecurity, and socio-economic inequality. While technological and institutional challenges remain, coordinated efforts involving policy support, innovation, and societal participation can unlock the full potential of renewable energy systems. A strategic and inclusive transition towards renewables will be essential for achieving long-term sustainability and climate resilience.

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# Circular Economy: Transforming Waste into Wealth for India 2047

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## **Abstract**

India's urban transition is occurring at an unprecedented scale and speed. By 2047, a significant majority of the population is expected to reside in cities, placing immense pressure on natural resources, infrastructure, and ecosystems. Traditional linear economic models based on extraction, consumption, and disposal are no longer viable in the face of rapid urbanization and environmental degradation. The circular economy offers a transformative framework that reimagines waste as a valuable resource and promotes sustainable production and consumption patterns. This paper investigates the roadmap for scaling circular production models in Indian urban centers to manage the challenges of urban growth. It focuses specifically on solid waste management, e-waste recycling, and used water treatment as critical pillars for sustaining liveable, resilient, and smart cities by 2047. The study argues that embedding circular economy principles into urban governance, infrastructure, and citizen behavior is essential for achieving long-term resource efficiency, environmental sustainability, and inclusive economic growth.

**Keywords:** Urbanization, Resource efficiency, Sustainable consumption, Smart cities

## **1. Introduction**

Urbanization has emerged as one of the most defining forces shaping India's socio-economic and environmental future. Cities function as engines of growth, innovation, and opportunity, yet they also concentrate consumption, waste generation, and environmental stress. As India moves toward its centenary year of independence in 2047, the challenge is not merely to expand urban spaces but to ensure that cities remain liveable, equitable, and ecologically sustainable.

The dominant linear economic model—characterized by the extraction of raw materials, production of goods, consumption, and disposal—has contributed to escalating waste volumes, pollution, and resource depletion. Urban areas are now grappling with overflowing landfills, unsafe disposal

of electronic waste, and severe water stress due to inadequate treatment and reuse of wastewater. These challenges threaten public health, environmental integrity, and the overall quality of urban life.

The circular economy presents a paradigm shift by proposing a regenerative system in which resources are reused, recycled, and recovered, thereby minimizing waste and environmental harm. Rather than viewing waste as an inevitable by-product of growth, the circular economy treats it as a valuable input for new economic activities. This paper explores how circular economy principles can be systematically scaled in Indian cities to transform waste into wealth and support sustainable urbanization by 2047.

## **2. Conceptual Framework: Circular Economy in Urban Contexts**

The circular economy is based on three core principles: designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. In urban settings, these principles translate into integrated systems of production, consumption, and waste management that prioritize resource efficiency and environmental sustainability.

Cities are uniquely positioned to implement circular economy models because they concentrate material flows, economic activities, and innovation capacities. Urban circularity involves closing resource loops across sectors such as construction, energy, water, electronics, and food systems. It requires collaboration among governments, industries, communities, and consumers to redesign urban metabolism in a sustainable manner.

In the Indian context, adopting a circular economy is not only an environmental necessity but also an economic opportunity. Urban circular systems can generate employment, reduce import dependence on raw materials, and enhance resilience to global supply chain disruptions. As India pursues the vision of developed and inclusive growth by 2047, circular economy practices must become integral to urban planning and governance.

## **3. Rapid Urbanization and Resource Stress in India**

India's urban population has been growing steadily due to natural population increase and rural-to-urban migration. This demographic shift has intensified demand for housing, energy, water, transportation, and consumer goods. While cities contribute significantly to national economic output, they also account for a disproportionate share of resource consumption and waste generation.

### **3.1 Urban Waste Generation Trends**

Urban households, commercial establishments, and industries generate massive quantities of solid waste daily. The composition of waste has also changed, with higher proportions of plastics, packaging materials, and

electronic waste. Existing waste management systems are often inadequate, leading to environmental pollution and public health risks.

### **3.2 Rising Electronic Consumption**

The rapid diffusion of digital technologies, smartphones, household appliances, and renewable energy systems has resulted in a sharp increase in e-waste. Urban centers are the primary generators of electronic waste, yet formal recycling infrastructure remains insufficient.

### **3.3 Urban Water Crisis**

Water scarcity has become a major concern for Indian cities due to over-extraction of groundwater, pollution of surface water bodies, and inefficient distribution systems. Large volumes of wastewater remain untreated or underutilized, exacerbating environmental degradation.

These challenges highlight the urgency of transitioning from linear to circular urban systems that can support sustainable growth.

## **4. Solid Waste Management as a Cornerstone of Urban Circularity**

Solid waste management is one of the most visible and pressing challenges in Indian cities. Traditional approaches relying on collection and landfill disposal are environmentally unsustainable and economically inefficient.

### **4.1 Circular Approach to Solid Waste**

A circular solid waste management system emphasizes waste prevention, segregation at source, recycling, composting, and energy recovery. By reducing the volume of waste sent to landfills, cities can lower greenhouse gas emissions and land degradation.

### **4.2 Economic Potential of Waste**

Organic waste can be converted into compost or biogas, while recyclable materials such as paper, glass, metals, and plastics can be reintroduced into production cycles. This transformation creates value chains that support livelihoods, particularly for informal waste workers.

### **4.3 Institutional and Behavioral Challenges**

Despite policy frameworks, challenges persist due to limited public awareness, lack of infrastructure, and weak enforcement. Achieving circular solid waste management requires sustained citizen participation and decentralized solutions tailored to local contexts.

## **5. E-Waste Recycling and Resource Recovery**

Electronic waste represents one of the fastest-growing waste streams in urban India. Improper handling of e-waste leads to the release of toxic substances, posing serious health and environmental risks.

### **5.1 Importance of Circular E-Waste Management**

E-waste contains valuable materials such as copper, aluminum, and rare earth elements. Circular recycling systems enable safe recovery of these resources, reducing dependence on virgin mining and conserving natural capital.

### **5.2 Formalization of Recycling Systems**

Currently, a large share of e-waste recycling occurs in the informal sector using unsafe practices. Integrating informal workers into formal recycling systems can improve environmental outcomes while ensuring social inclusion.

### **5.3 Producer Responsibility and Innovation**

Extended producer responsibility frameworks encourage manufacturers to design durable, repairable, and recyclable products. Innovation in product design and recycling technologies is essential for scaling e-waste circularity in cities.

## **6. Used Water Treatment and Urban Water Circularity**

Water is a critical resource for urban sustainability, yet it is often used inefficiently and discarded after a single cycle of consumption.

### **6.1 Wastewater as a Resource**

Treated wastewater can be reused for industrial processes, construction, landscaping, and groundwater recharge. This approach reduces pressure on freshwater sources and enhances urban water security.

### **6.2 Decentralized Treatment Solutions**

Decentralized wastewater treatment systems are particularly suitable for dense urban areas, as they reduce infrastructure costs and enable localized reuse.

### **6.3 Environmental and Public Health Benefits**

Effective wastewater treatment prevents pollution of rivers and lakes, improves sanitation, and contributes to healthier urban ecosystems.

## **7. Circular Economy and Smart Cities**

The concept of smart cities aligns closely with circular economy objectives. Smart technologies enable efficient monitoring, data-driven decision-making, and optimized resource use.

### **7.1 Digital Tools for Circular Systems**

Sensors, data platforms, and artificial intelligence can improve waste collection, recycling efficiency, and water management.

## **7.2 Integration of Circular Infrastructure**

Smart cities can integrate renewable energy, sustainable mobility, and circular waste systems to create low-carbon urban environments.

## **7.3 Enhancing Urban Liveability**

Circular and smart city initiatives together enhance air quality, public health, and overall quality of life for urban residents.

## **8. Roadmap for Scaling Circular Production Models by 2047**

Achieving a circular urban economy requires a long-term and multi-dimensional roadmap.

### **8.1 Policy and Governance Reforms**

- Mainstreaming circular economy principles into urban planning
- Strengthening regulatory frameworks and institutional coordination

### **8.2 Infrastructure Development**

• Expanding recycling, composting, and wastewater treatment facilities

- Investing in circular industrial clusters

### **8.3 Economic Incentives and Market Development**

- Encouraging private investment in circular businesses
- Supporting green startups and innovation ecosystems

### **8.4 Citizen Engagement and Behavioral Change**

- Promoting sustainable consumption practices
- Integrating circular economy education into curricula

## **9. Challenges to Implementation**

While the circular economy holds immense promise, several barriers remain, including financial constraints, technological gaps, and resistance to behavioral change. Addressing these challenges requires sustained political commitment, public-private partnerships, and international cooperation.

## **10. Governance and Institutional Framework for a Circular Urban Economy**

The successful implementation of circular economy principles in urban India depends heavily on robust governance and institutional arrangements. Urban governance in India is characterized by multiple layers of authority, including central, state, and municipal governments. While decentralization has empowered urban local bodies, many cities still struggle with limited financial autonomy, technical capacity, and administrative coordination.

A circular economy framework requires governance mechanisms that transcend sectoral silos. Waste management, water supply, energy, housing, and industrial development are often planned independently, leading to inefficiencies and duplication of efforts. Integrating circular economy objectives into city master plans, zoning regulations, and infrastructure investments can promote coherence and long-term sustainability.

Institutional reforms must also prioritize transparency, accountability, and data-driven decision-making. Digital governance platforms can enhance monitoring of waste flows, recycling rates, and water reuse, enabling policymakers to assess progress and adjust strategies accordingly. Strengthening public institutions while fostering collaboration with the private sector and civil society is essential for scaling circular urban systems.

## **11. Economic Dimensions of the Circular Economy**

### **11.1 Circular Economy as a Driver of Urban Economic Growth**

Contrary to the perception that sustainability constrains growth, the circular economy can act as a catalyst for economic expansion. By extending product lifecycles and maximizing material productivity, circular systems reduce costs and enhance competitiveness. Urban centers adopting circular models can attract investment in recycling industries, green manufacturing, and environmental services.

The transformation of waste into wealth generates new markets for secondary raw materials, recycled products, and eco-friendly services. These markets not only reduce environmental externalities but also stimulate innovation and entrepreneurship, particularly among small and medium enterprises.

### **11.2 Employment Generation and Skill Development**

Circular economy activities are labor-intensive and offer significant employment potential. Waste collection, sorting, recycling, repair, remanufacturing, and water treatment create jobs across skill levels. Formalizing these sectors can improve job quality, social security, and occupational safety.

Skill development programs tailored to circular industries are critical for preparing the urban workforce. Technical training in recycling technologies, wastewater treatment, and digital monitoring systems enhances employability and supports long-term economic resilience.

### **11.3 Fiscal Benefits for Urban Local Bodies**

Circular systems can reduce municipal expenditures on landfills, waste transportation, and environmental remediation. Revenue generation through user fees, recycled material sales, and energy recovery improves the financial

sustainability of urban services. Over time, these fiscal benefits can be reinvested in infrastructure and social development.

## **12. Social Inclusion and Equity in Circular Urban Development**

### **12.1 Integrating the Informal Sector**

In Indian cities, informal workers play a vital role in waste collection and recycling. However, they often operate under hazardous conditions with limited recognition and protection. A circular economy must prioritize inclusive policies that integrate informal workers into formal systems without displacing livelihoods.

Providing access to training, safety equipment, financial services, and social security can improve working conditions while enhancing system efficiency. Inclusive approaches strengthen social acceptance and ensure equitable distribution of benefits.

### **12.2 Citizen Participation and Behavioral Change**

Citizens are central to the success of circular economy initiatives. Waste segregation, responsible consumption, and water conservation require behavioral shifts at the household and community levels. Awareness campaigns, incentive mechanisms, and participatory governance can encourage sustained engagement.

Educational institutions, resident welfare associations, and community organizations can act as catalysts for behavioral change. Embedding sustainability values into everyday practices transforms circularity from a policy mandate into a social norm.

## **13. Role of Technology and Innovation**

Technological innovation is a key enabler of circular urban systems. Advances in material science, waste processing, and digital technologies have expanded the feasibility and scalability of circular solutions.

Artificial intelligence and data analytics can optimize waste collection routes, improve segregation efficiency, and predict resource demand. Blockchain technology enhances traceability in recycling chains, ensuring accountability and compliance with environmental standards.

Innovation ecosystems comprising startups, research institutions, and incubators play a crucial role in developing localized solutions. Public investment in research and development accelerates the adoption of affordable and context-specific technologies.

## **14. Circular Economy and Climate Resilience**

The circular economy contributes significantly to climate change

mitigation and adaptation. Reducing waste, increasing recycling, and reusing water lower greenhouse gas emissions associated with extraction, production, and disposal processes.

Urban circular systems enhance climate resilience by diversifying resource sources, reducing dependency on vulnerable supply chains, and improving adaptive capacity. For example, water reuse systems increase resilience to droughts, while decentralized waste processing reduces risks from extreme weather events.

Aligning circular economy strategies with climate action plans ensures synergistic outcomes and maximizes environmental benefits.

### **15. International Perspectives and Learning for India**

Globally, cities have adopted circular economy strategies to address urban sustainability challenges. Experiences from international urban centers highlight the importance of long-term vision, stakeholder engagement, and regulatory consistency.

India can adapt global best practices while accounting for local socio-economic and cultural contexts. South–South cooperation, technology transfer, and global financing mechanisms provide opportunities to accelerate the transition toward circular cities.

### **16. Monitoring, Evaluation, and Performance Measurement**

Effective monitoring and evaluation are essential for ensuring the success of circular economy initiatives. Clear indicators related to waste reduction, recycling rates, water reuse, and resource efficiency enable evidence-based policymaking.

Data transparency and public reporting foster accountability and citizen trust. Continuous assessment allows cities to identify bottlenecks, scale successful interventions, and adapt to evolving urban challenges.

### **17. Future Outlook: Vision for Circular Urban India 2047**

By 2047, Indian cities must evolve into systems that are regenerative, inclusive, and resilient. Circular economy principles offer a holistic framework for managing urban growth while preserving environmental integrity.

Achieving this vision requires coordinated action across governance levels, sustained investment, technological innovation, and societal participation. Cities that successfully adopt circular models will be better positioned to deliver economic prosperity, environmental sustainability, and improved quality of life.

## 18. Conclusion

The circular economy represents a transformative pathway for India's urban future. As rapid urbanization intensifies resource pressures, linear development models are no longer sustainable. Transforming waste into wealth through circular production and consumption systems enables cities to decouple growth from environmental degradation.

Solid waste management, e-waste recycling, and used water treatment form the foundation of circular urban systems and must be prioritized in policy and practice. A comprehensive roadmap supported by governance reforms, economic incentives, technological innovation, and citizen engagement is essential for achieving sustainable urban development by 2047.

By embedding circular economy principles into urban planning and everyday life, India can build cities that are not only smart and efficient but also liveable, resilient, and equitable for future generations.

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# Agriculture: Sustainability Challenges & Solutions for India

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## Abstract

India is an agrarian country, and agriculture contributes significantly to employment and GDP. However, due to increasing population and growing industrial demand, there is pressure to increase agricultural production. This has led to increased use of fertilizers and chemicals, affecting the quality of agricultural products and impacting the environment. Sustainable agriculture is necessary to bring about quantitative and qualitative improvements in the agricultural sector and to meet future needs. This research focuses on the challenges in the path of sustainable agriculture and the measures to overcome them. This study uses a descriptive research design and secondary data. The major challenges in the path of sustainable agriculture include farmer illiteracy, lack of awareness, low inclination towards organic farming, lack of government incentives, marketing problems, small landholdings, farmers' traditional mindset, and climate change. To achieve the goals of sustainable agriculture, it is necessary to increase literacy and awareness among farmers, as well as invest in research in this area.

**Keywords:** Challenges, Agriculture, Sustainable Agriculture, Organic Agriculture.

## I. Introduction

India has always been known as an agrarian country. Due to its agricultural nature, more than half of its population directly depends on farming for their livelihood. Besides providing sustenance, the agricultural sector also makes a significant contribution to India's GDP. According to the 2024-25 Economic Survey, the estimated growth rate of agriculture in India is 6.4%. It would not be wrong to call agriculture the lifeline of the country's industries, as it not only provides food for the people but also plays a crucial role in the development of industries. Many industries use agricultural products as raw materials. If agricultural development stagnates, their development will also halt. Thus, agriculture forms the basis of supply for industries. However, demand is even more important than supply for

industrial development. The agricultural sector also plays a vital role in generating demand for the industrial sector. Agriculture helps increase demand for both direct and indirect industrial products. Directly, the use of machinery, seeds, chemical fertilizers, etc., manufactured by industries in the agricultural sector increases demand for the industrial sector. On the other hand, when the agricultural sector develops, the income of the people dependent on it increases. When their income rises, it is clear that a large portion of that income will be spent on buying industrial products. This indirectly increases demand for industries. This makes it crystal clear that while industrial development is essential for the country's progress, agricultural development is equally crucial for the growth of industries.

India has now surpassed China to become the world's most populous country. This increased population, and the projected continued growth, means that the demand for agricultural products is inevitably going to rise rapidly, both now and in the future. This rapidly increasing demand is putting immense pressure on India's agricultural sector. On the other hand, those involved in agriculture are focusing heavily on increasing crop yields to improve their livelihoods. This has led to the excessive use of chemicals and fertilizers to boost production. While this may increase agricultural output in the short term, this trend is unsustainable. The excessive use of chemicals negatively impacts both the health and quality of the soil, which directly affects agricultural production and leads to economic losses for farmers (Ray et al., 2021). The overuse of chemicals and fertilizers in agriculture not only harms the soil but also has a detrimental effect on the environment. Furthermore, increased irrigation is being used to boost crop yields, leading to a continuous decline in groundwater levels and deterioration in water quality. This raises concerns about the future of agricultural production.

Currently, the agricultural sector is able to meet the demand for existing agricultural products, but meeting future demand while maintaining product quality will be challenging. The excessive use of chemicals and the failure to adopt proper farming practices are causing land to become barren at an alarming rate. This raises concerns that the amount of arable land will decrease even further in the future. Furthermore, due to population growth, the demand for land is increasing for housing, industrial development, educational institutions, recreational facilities, and many other purposes. This will negatively impact the amount of arable land, leading to a rapid decline. This will inevitably affect agricultural production.

Agriculture impacts the environment, and changes in the environment affect the climate, which in turn affects the weather. The most significant impact of these weather changes is felt by agriculture itself. Experience over the past few years shows that climate and weather changes in India have led

to frequent floods and droughts. This has resulted in fluctuations in agricultural production. Furthermore, the agricultural sector is facing a serious problem: the emergence of new diseases that are severely impacting production. These are some of the main reasons for the continuous fluctuations in agricultural production, which directly affect food security (Kumar & Sharma, 2013). If India is to become a developed nation by 2047, agricultural development must be a priority. Sustainable agriculture is essential for this development. Without sustainable agricultural development, the country's overall development is impossible. Therefore, the focus today is shifting from simply agricultural development to sustainable agricultural development.

### **1.1 Sustainable Agriculture**

Sustainable agriculture is a method of farming that utilizes and manages the existing ecosystem in a way that ensures continuous agricultural production while simultaneously protecting the biodiversity of the area. Sustainable agriculture also aims to prevent a decline in land productivity and to meet both the current and future needs for agricultural products. Sustainable agriculture encompasses a variety of farming systems and practices that emphasize striking a balance between social, economic, and environmental sustainability in both rural and urban areas (Nandwani & Smith, 2016). It also recognizes the importance of improving the socio-economic conditions of farmers to ensure their continued involvement in the sector. Thus, sustainable agriculture is a broad concept that focuses on the development of current agricultural practices while also considering their future implications.

Some estimates suggest that the world's population is expected to reach 9.2 billion by 2050 (Lal, 2009). This will lead to a more than 30% increase in the demand for agricultural products, even considering only food (Casagrande et al., 2014). Given the rate of population growth in India, current agricultural production would need to be doubled to meet the demands of the growing population. When the Green Revolution began in India in the 1960s, the use of fertilizers, hybrid (HYV) seeds, and irrigation increased significantly to boost agricultural production, particularly of food grains. This increased production, but it had negative impacts on the quality of agricultural products. The adoption of inappropriate irrigation practices has led to increased soil erosion and a rise in the amount of barren land. The increase in agricultural activities has also resulted in environmental degradation. Although the concept of sustainable agriculture emerged on the world stage in the 1970s, it gained more prominence after the Earth Summit in 1992. However, since then, numerous challenges have hindered the progress of sustainable agriculture. India also faces many challenges on

the path to sustainable agriculture, and overcoming these challenges is crucial for achieving sustainability in the agricultural sector.

## **2. Literature Review**

Achieving the goal of sustainable agriculture requires working simultaneously on a multitude of agriculture related issues. This necessitates the use of technologies that not only contribute to increased production but also maintain product quality. Developing such technologies on a large scale is extremely challenging for a vast agricultural country like India. The biggest obstacles in this path are the lack of finance and human resources. Sustainable agriculture should emphasize organic farming. Bahu et al. (2013) found that adopting organic farming does not reduce agricultural production and does not have any adverse effects on soil health. However, motivating people to adopt organic farming is very challenging. Protecting crops from diseases is essential for sustainable agriculture. However, if diseases are not controlled naturally, the environment is affected. Using traditional organic methods without pesticides to control diseases reduces costs, and the increased nutrients enhance the plants' ability to fight diseases (Dordas.). However, training farmers in traditional organic methods is very challenging. Sayre et al. (2008) found in his research that promoting sustainable agriculture requires changing the traditional mindset of farmers. This will motivate them to use advanced and environmentally friendly techniques and methods in farming, but the lack of education among farmers is the biggest challenge in this regard.

### **2.1 Objectives**

1. To identify the challenges in the path of sustainable agriculture.
2. To provide suggestions for policy formulation to achieve the goals of sustainable agriculture.

## **3. Research Methodology**

This research is based on a descriptive research design and utilizes qualitative methods. The study uses various types of information from secondary sources to fulfill the research objectives, including various reports, research papers, government publications, and information available on the internet.

## **4. Challenges for Sustainable Agriculture**

### **1. Farmer Literacy**

For sustainable agriculture, it is essential for farmers to be aware, and the biggest challenge in the path of awareness is illiteracy. According to the 2011 census in India, the literacy rate was 74.04%, which still leaves a large segment of the population illiterate and engaged in agriculture. These people

have no knowledge of sustainable agriculture and its importance, due to which they are unable to adopt sustainable practices. However, educating these people is a daunting task, if not impossible.

## **2. Training**

For sustainable agriculture, farmers need training in various techniques, farming methods, and the use of equipment. Providing training to all farmers is a serious challenge. It requires a large number of master trainers and significant funding. Currently, overcoming this challenge is very difficult.

## **3. Change in Mindset**

To achieve the goal of sustainable agriculture, it is necessary to bring about a change in people's mindset. Only when people's perspective changes will they adopt the advanced techniques and better farming practices that are necessary for sustainable agriculture. However, changing people's mindset is more difficult than performing organ transplants. Due to this lack of change in mindset, farmers continue to use traditional farming methods.

## **4. Lack of Finance**

Improving agricultural practices and techniques is essential for achieving the goal of sustainable agriculture. Sometimes, farmers who adopt sustainable agricultural practices also experience financial losses. If their losses are not compensated, they will not adopt those practices again. Compensating for these financial losses requires significant funding. Farmers also need incentives for sustainable agriculture. All of this requires substantial financial resources.

## **5. High Investment Costs**

When sustainable agriculture is adopted, it requires the adoption of new farming methods, equipment, and techniques. All of this requires considerable investment, and most farmers are not in a position to bear this expense due to poverty. Furthermore, adopting sustainable agricultural practices is more expensive than conventional farming, which is why farmers hesitate to adopt them.

## **6. Low Inclination towards Organic Farming**

Most farmers believe that adopting organic farming will lead to a decrease in production instead of an increase, which will further worsen their financial situation. Because of this fear, they are forced to continue farming using previously established methods. Changing this mindset, which is largely justified, is a very challenging task.

## **7. Climate Change**

Agricultural production is largely influenced by the weather. Currently,

rapid climate change is affecting rainfall, temperature, and seasonal changes, negatively impacting agricultural production. Controlling this climate change seems impossible, at least not currently.

### **8. Inadequate Irrigation Facilities**

Water is a crucial raw material for agriculture, which is used for irrigation. However, even today, there is a significant shortage of irrigation water across the entire agricultural land area, negatively impacting both agricultural production and productivity. For a country with such a vast land area like India, providing irrigation water to all farms is now virtually impossible.

### **9. Smaller Land Size**

Due to the increasing population and inheritance laws in India, the size of landholdings is steadily shrinking. If a small or marginal farmer adopts unsustainable agricultural practices and this result in lower production, it becomes difficult for the small farmer to overcome the resulting situation. In contrast, it is not particularly risky for a large farmer to take such risks because they have a higher risk tolerance than small farmers. Therefore, adopting sustainable agricultural practices is more risky for small farmers.

### **10. Barren Land and Cropland**

In India, due to climate change and the adoption of improper agricultural practices, barren land is increasing, while in some areas, there is also a crop problem, which is leaving large areas uncultivated, reducing production. Addressing both is extremely challenging.

### **11. Marketing Challenge**

No matter how high agricultural production is, farmers do not receive a fair price for their produce, and unless that is done in a transparent manner, farmers' welfare cannot be achieved. India has made significant improvements in agricultural marketing, but farmers are forced to sell their produce to middlemen because almost all farmers borrow from them, and once trapped in their clutches, they are permanently disadvantaged.

### **12. Availability of High-Yield Seeds and Fertilizers**

Continuity in agricultural production requires farmers to have access to high-yield seeds at the right time and with complete reliability. However, it is often observed that counterfeit seeds are flooding the market, leading to a decrease in yield and an increase in the risk of diseases in crops grown using these seeds, increasing the cost of farming for farmers, which is financially detrimental to them. In recent years, it has been observed that farmers are facing a severe shortage of chemical fertilizers like urea and DAP, which are essential at the time of sowing, affecting production.

### **13. Deteriorating Soil Quality**

The adoption of improper agricultural practices is leading to a decline in soil health and quality, posing a threat to future production. In such a situation, raising awareness and motivating farmers to adopt practices necessary to maintain soil quality and health is a challenge for sustainable agriculture.

### **14. Challenges of Globalization**

In an agricultural country like India, while the WTO is pushing to reduce agricultural subsidies, the United States is exerting pressure through tariffs to open the Indian agricultural market to its own agricultural products. If this pressure leads to the opening of the Indian agricultural market to other countries, it will become difficult for Indian farmers to compete with their cheaper products and they may be ruined. Reducing agricultural subsidies will harm farmers.

### **15. Lack of Research**

Sustainable agriculture requires extensive research in the agricultural sector, but the current pace of research is insufficient to meet the needs for improved seeds, fertilizers, and technologies. Bridging this gap between the need for agricultural research and the reality of its current state is a serious challenge.

## **5. Conclusion**

Sustainable agriculture is not only a necessity of the present but also a future requirement from a food security perspective. When sustainability is achieved in agriculture, it will ensure both agricultural and industrial development. However, while sustainability in agriculture is crucial, even greater challenges are hindering its progress. Illiteracy among farmers, lack of awareness, and lack of finance, marketing challenges, and threats to biodiversity, declining soil quality, and the high cost of sustainable practices are some of the serious challenges currently faced by the agricultural sector. Sustainability in agriculture is not possible without addressing the lack of research, yet this area is not receiving sufficient attention. These challenges are indeed serious, but if the government, the private sector, and various global institutions work together, sustainability in agriculture can be achieved, which can secure both the present and the future.

## **6. Suggestions**

1. Awareness and literacy among farmers should be promoted.
2. Farmers can be motivated towards sustainable agriculture by providing them with training and financial assistance.

3. More expenditure should be allocated to research in the agricultural sector.

4. Local, national, and international collaboration should be promoted for sustainable agriculture.

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# Financial Inclusion as a Pillar of Viksit Bharat 2047

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## Abstract

Financial inclusion is a key enabler of inclusive and sustainable economic development and forms a crucial foundation for achieving the vision of Viksit Bharat @ 2047. It refers to ensuring universal access to affordable and appropriate financial services such as savings, credit, insurance, pension, and digital payment systems, particularly for marginalized and vulnerable sections of society. In a diverse and populous country like India, financial inclusion plays a transformative role in reducing poverty, promoting entrepreneurship, enhancing financial security, and ensuring equitable growth.

This paper analyses the concept and significance of financial inclusion in the context of India's developmental aspirations. It examines major government initiatives such as Pradhan Mantri Jan Dhan Yojana, Direct Benefit Transfer, Mudra Yojana, Digital India, and social security schemes, which have expanded the reach of formal financial services. The study also highlights the growing role of digital financial inclusion through platforms like UPI, Aadhaar-enabled payment systems, and fintech innovations. Further, the paper discusses key challenges such as financial illiteracy, digital divide, gender inequality, inactive accounts, and cybersecurity concerns.

The paper concludes that strengthening financial literacy, digital infrastructure, inclusive credit mechanisms, and regulatory frameworks is essential to deepen financial inclusion. A robust and inclusive financial system will not only accelerate economic growth but also promote social justice and empowerment, making financial inclusion a strong pillar of Viksit Bharat 2047.

**Keywords:** Financial Inclusion, Viksit Bharat 2047, Inclusive Growth, Digital Finance, Financial Literacy, Economic Development

## I. Introduction

India, as one of the fastest-growing major economies in the world, has set an ambitious goal of becoming a developed nation by 2047. The vision of Viksit Bharat @ 2047 emphasizes inclusive growth, social justice, economic self-reliance, and sustainable development. In this context, financial inclusion

plays a pivotal role by integrating the economically weaker and marginalized sections of society into the formal financial system.

Financial inclusion ensures access to useful and affordable financial products and services—such as savings accounts, credit, insurance, and payment systems—to all individuals and businesses in a fair and transparent manner. An inclusive financial system enables individuals to manage risks, invest in education and entrepreneurship, and improve their standard of living. Therefore, financial inclusion is not merely a banking objective but a comprehensive development strategy essential for achieving the goals of *Viksit Bharat 2047*.

## **2. Concept of Financial Inclusion**

Financial inclusion refers to the process of ensuring universal access to financial services at affordable costs, particularly for disadvantaged and low-income groups. According to the Reserve Bank of India (RBI), financial inclusion involves access to appropriate financial products and services needed by all sections of society, especially the vulnerable groups.

### **The key components of financial inclusion include:**

- Access to basic banking services such as savings and deposit accounts
- Availability of affordable credit
- Access to insurance and pension services
- Digital payment and remittance facilities

A well-developed financial inclusion framework contributes to economic stability, reduces income inequality, and fosters inclusive growth.

## **3. Importance of Financial Inclusion for *Viksit Bharat 2047***

Financial inclusion is fundamental to realizing the vision of *Viksit Bharat 2047* for several reasons:

### **3.1 Promotes Inclusive Economic Growth**

Financial inclusion ensures that the benefits of economic growth reach all sections of society, including the poor, rural population, women, and marginalized communities. By integrating these groups into the formal financial system, financial inclusion promotes equitable growth and reduces income inequality, which is essential for building a developed India.

### **3.2 Helps in Poverty Alleviation**

Access to basic financial services such as savings accounts, affordable credit, insurance, and pensions enables households to manage financial risks

and cope with economic shocks. Financial inclusion reduces dependence on informal moneylenders and helps people invest in income-generating activities, thereby contributing to long-term poverty reduction.

### **3.3 Encourages Entrepreneurship and Employment Generation**

Financial inclusion provides access to credit for small entrepreneurs, farmers, self-employed individuals, and MSMEs. Availability of institutional finance encourages entrepreneurship, promotes innovation, and leads to employment generation. This is crucial for absorbing India's large working-age population and achieving sustainable development by 2047.

### **3.4 Strengthens Financial Security and Social Protection**

Financial inclusion facilitates access to insurance and pension schemes, enhancing financial security for individuals and families. Social security schemes help protect vulnerable sections from uncertainties such as illness, accidents, and old age, thereby strengthening social stability in a developed economy

### **3.5 Empowers Women and Marginalized Sections**

Access to financial services empowers women by giving them control over financial resources and decision-making. Women's financial inclusion improves household welfare, increases participation in economic activities, and promotes gender equality—an essential component of the *Viksit Bharat* vision.

### **3.6 Supports Digital and Technological Transformation**

Digital financial inclusion through platforms such as UPI, mobile banking, and Aadhaar-based systems promotes transparency, efficiency, and accountability. A digitally inclusive financial ecosystem accelerates formalization of the economy and supports India's transition towards a modern, technology-driven developed nation.

### **3.7 Improves Government Service Delivery**

Financial inclusion enables effective implementation of government welfare schemes through Direct Benefit Transfer (DBT). It reduces leakages, corruption, and administrative costs while ensuring that benefits reach the intended beneficiaries. Efficient service delivery strengthens governance and public trust.

## **4. Government Initiatives for Financial Inclusion in India**

The Government of India has undertaken several comprehensive initiatives to promote financial inclusion with the objective of integrating all sections of society into the formal financial system. These initiatives aim

to ensure access to affordable financial services, reduce poverty, promote inclusive growth, and support the vision of Viksit Bharat @ 2047.

#### **4.1 Pradhan Mantri Jan Dhan Yojana (PMJDY)**

Launched in 2014, PMJDY is one of the most significant initiatives for financial inclusion in India. The scheme aims to provide universal access to banking facilities by opening basic savings bank deposit accounts for unbanked households. PMJDY accounts offer facilities such as zero-balance accounts, RuPay debit cards, accidental insurance cover, and access to overdraft facilities. This scheme has played a crucial role in bringing millions of people into the formal banking system.

#### **4.2 Direct Benefit Transfer (DBT)**

The Direct Benefit Transfer system was introduced to transfer government subsidies and welfare benefits directly into beneficiaries' bank accounts. DBT reduces leakages, eliminates intermediaries, and ensures transparency and efficiency in welfare delivery. It has strengthened financial inclusion by encouraging people to maintain active bank accounts and participate in the formal financial system.

#### **4.3 Pradhan Mantri Mudra Yojana (PMMY)**

Pradhan Mantri Mudra Yojana provides collateral-free loans to micro and small enterprises under three categories—Shishu, Kishor, and Tarun. The scheme aims to promote entrepreneurship, self-employment, and income generation, particularly among small traders, artisans, women entrepreneurs, and youth. Mudra Yojana has significantly improved access to institutional credit for the informal sector.

#### **4.4 Digital India Initiative**

The Digital India programme focuses on transforming India into a digitally empowered society and knowledge economy. It promotes digital payments, online banking, and financial technology solutions. Initiatives such as UPI, mobile banking, and Aadhaar-enabled payment systems have expanded financial access, especially in rural and remote areas, thereby strengthening digital financial inclusion.

#### **4.5 Aadhaar-Based Financial Inclusion**

Aadhaar has played a vital role in financial inclusion by providing a unique digital identity to citizens. Aadhaar-enabled bank accounts facilitate easy account opening, authentication, and access to government benefits. Aadhaar-based payments have enhanced transparency and reduced fraud in financial transactions.

#### **4.6 Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)**

This life insurance scheme provides affordable life insurance coverage to low-income individuals. It enhances financial security and protects families against financial hardships arising from the death of the breadwinner.

#### **5.Role of Digital Financial Inclusion**

Digital financial inclusion refers to the use of digital technologies to provide affordable and accessible financial services to all sections of society, particularly the poor, rural population, women, and small businesses. In the context of Viksit Bharat @ 2047, digital financial inclusion plays a transformative role in accelerating inclusive growth and modernizing the Indian economy.

##### **5.1 Expanding Access to Financial Services**

Digital platforms such as mobile banking, Unified Payments Interface (UPI), Aadhaar-enabled payment systems, and fintech applications have significantly expanded access to financial services. People in remote and rural areas can now open bank accounts, transfer money, pay bills, and receive government benefits without visiting bank branches. This has helped bridge geographical barriers and increased financial participation.

##### **5.2 Promoting Financial Inclusion of Marginalized Groups**

Digital financial inclusion has enabled women, informal workers, small farmers, and micro-entrepreneurs to access financial services conveniently. Mobile wallets and digital payment platforms provide safe and secure alternatives to cash, empowering marginalized groups and improving their economic independence.

##### **5.3 Enhancing Efficiency, Transparency, and Accountability**

Digital financial systems reduce transaction costs, minimize paperwork, and speed up financial transactions. Digital payments promote transparency by creating transaction records, which reduces corruption and leakages. This is particularly important for government welfare schemes implemented through Direct Benefit Transfer (DBT).

##### **5.4 Supporting Entrepreneurship and MSMEs**

Digital finance facilitates easy access to credit, digital payments, and financial management tools for micro, small, and medium enterprises (MSMEs). Fintech platforms use alternative data for credit assessment, enabling small businesses and startups to obtain loans quickly and efficiently. This promotes entrepreneurship, innovation, and employment generation.

##### **5.5 Encouraging Formalization of the Economy**

Digital financial inclusion reduces dependence on cash and informal

financial systems. Increased use of digital payments and banking services encourages businesses and individuals to operate within the formal economy, improving tax compliance and strengthening economic stability.

### **5.6 Strengthening Financial Literacy and Awareness**

Digital platforms often provide user-friendly interfaces and financial information that help users understand financial products and services. This enhances financial literacy and encourages responsible financial behavior, contributing to long-term economic growth.

## **6.Challenges of Digital Financial Inclusion**

Despite its immense potential, digital financial inclusion faces several challenges that must be addressed to achieve the vision of Viksit Bharat 2047.

### **6.1 Digital Divide**

Unequal access to internet connectivity, smartphones, and digital infrastructure remains a major challenge, especially in rural and remote areas. The digital divide creates disparities in access to digital financial services and limits universal inclusion.

### **6.2 Low Digital and Financial Literacy**

Many individuals lack the skills and confidence required to use digital financial platforms. Low levels of digital and financial literacy increase the risk of errors, fraud, and misuse, discouraging adoption of digital financial services.

### **6.3 Cybersecurity and Data Privacy Risks**

The rapid growth of digital finance has increased exposure to cyber threats such as online fraud, identity theft, and data breaches. Inadequate awareness of cybersecurity practices among users further exacerbates these risks and undermine trusts in digital systems.

## **Conclusion**

Financial inclusion is a cornerstone of India's vision to become a developed nation by 2047. By ensuring universal access to financial services, India can promote inclusive growth, reduce poverty, empower marginalized communities, and strengthen its economic foundation. While notable progress has been made through various government initiatives and digital innovations, sustained efforts are required to overcome existing challenges. Strengthening financial inclusion will not only support economic development but also uphold the ideals of equity, opportunity, and social justice envisioned in Viksit Bharat 2047.

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# Global Benchmarks in Ecological Conservation and Sustainable Development: Lessons, Practices, and Future Pathways

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## 1. Introduction

In recent decades, environmental deterioration has intensified, driven by climate change, habitat loss, and unsustainable resource use. These challenges underscore the need for harmonized frameworks that integrate ecological protection with economic and social development. The **United Nations Sustainable Development Goals (SDGs)** provide a global structure that ties environmental protection to human welfare, poverty reduction, and economic growth. Ecological conservation focuses on protecting natural resources, while sustainable development emphasizes responsible resource use for current and future generations (Goyal, 2025). Achieving ecological sustainability requires that conservation goals—especially SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land)—are addressed in tandem with broader development priorities. Research shows that global conservation benchmarks guide governments and stakeholders toward coherent strategies that support resilient ecosystems and communities. The continued decline of global species biodiversity and ecosystem service function has seriously affected the sustainable development of regional social economy. The core of ecological civilization thought is sustainable development, and promoting sustainable development is also the path and means to achieve ecological civilization. (Ye et al., 2024)

## 2. Review of Literature

Ecological conservation and sustainable development are central to global efforts to address environmental degradation, biodiversity loss, and socio-economic inequities. This paper examines key global benchmarks—such as the United Nations Sustainable Development Goals (SDGs), nature-based solutions, and community-based conservation models—to identify lessons and best practices that contribute to resilient ecological governance. The development of genetic resource conservation networks — have significantly enhanced biodiversity conservation effectiveness. Innovative

development models including sustainable agriculture, forestry, animal husbandry, and fisheries; the development of full eco-tourism industry chains; and the branding of ecological products, have achieved synergistic progress between ecological protection and community development (Xu et al., 2025)

Conservation is an effort to protect or maintain natural resources so that damage does not occur. Conservation is an effort to preserve or protect resources that are processed wisely so that they obtain the maximum benefits and can be utilized for now and for future generations. (Sofia & Nugraheni, 2024) Conservation efforts often require significant resources, which can detract from socioeconomic development, potentially exacerbating poverty(Cao et al., 2021).

Practical strategies for dealing with uncertainty and avoiding unsustainable development include more coordinated policies and programs that link distinct political entities; greater flexibility in planning and management (Eckman et al., 2000) The adoption of green practices has transformed traditional systems into resilient and eco-friendly models, driving progress toward global sustainability goals. Despite significant advancements, (Uniyal & Raturi, 2025) best practices across corporate, governmental, and community sectors. Challenges, such as environmental degradation and overconsumption, are juxtaposed with technological innovation and international collaboration opportunities. (Aiguoarueghian et al., 2024)The decline in ecosystem services due to human activities directly impacts sustainable development goals (SDGs), highlighting the need for their preservation (Wei et al., 2024).

The study highlights innovative practices in biosphere reserves, emphasizing biodiversity monitoring, sustainable agriculture, eco-tourism, and community engagement as global benchmarks. It proposes optimizing conservation networks and enhancing scientific support to foster ecological protection and sustainable development pathways. (Xu et al., 2025) The paper discusses traditional Indian water conservation techniques, highlighting methods such as Johads, Jhalaras, Taankas, and Kunds for sustainable resource management. It emphasizes the integration of indigenous knowledge with modern technology in climate-resilient agriculture to enhance food security and livelihood sustainability. The approach includes examining the principles of sustainable architecture based on Vastu Shastra to contribute to ecological well-being. The research is framed within the context of international policies and protocols aimed at promoting environmental conservation and sustainable development. The methodology appears to be observational, focusing on the application of traditional practices and their effectiveness in contemporary settings. (Goyal, 2025).

Global benchmarks for ecological conservation are embedded in a growing body of scientific work and international policy. Conservation and sustainability research indicates that biodiversity conservation not only sustains ecosystem services but also supports socio-economic development through enhanced food security, water purification, and climate resilience. Efforts to harmonize biodiversity goals with SDGs reveal that opportunities lie in sustainable farming practices, community engagement, and global partnerships. Studies on nature-based and smart solutions emphasize that robust performance indicators aligned with SDG frameworks ensure that environmental projects contribute meaningfully to socio-economic objectives. Benchmarking tools help policymakers evaluate sustainability across environmental, economic, and social dimensions. Community participation models such as **Community-Based Mangrove Management (CBMM)** demonstrate successful local stewardship of ecosystems by devolving authority to resource users and fostering sustainable livelihoods.

### 3. Methodology

This research uses a **qualitative desk review** and **comparative analysis** of secondary data drawn from academic studies, policy analyses, and documented global initiatives. It includes systematic evaluation of sustainability frameworks, nature-based interventions, and participatory conservation practices. The analysis prioritizes peer-reviewed literature, global monitoring initiatives, and high-impact case studies to ensure reliable insights into effective benchmarks. Thematic analysis identifies common drivers of success—such as governance quality, innovation, and stakeholder engagement—and assesses their applicability across diverse environmental contexts.

#### 3.1 Theoretical Foundation of Sustainable Development

The Triple Bottom Line (TBL) The Triple Bottom Line framework, introduced by John Elkington, expands traditional performance evaluation beyond financial results to include social and environmental considerations. It encourages organizations to assess their overall impact on society and ecological systems alongside profitability. This holistic perspective has led many companies to adopt sustainability reporting practices. Such reports highlight achievements across economic, social, and environmental dimensions. Unilever's Sustainable Living Plan exemplifies this approach by promoting growth while reducing environmental impact and enhancing social value.

**Ecological Economics:-**Ecological economics is an interdisciplinary field that combines ecological and economic perspectives to ensure that economic activity remains within the limits of ecosystem carrying capacity.

It challenges the traditional assumption that continuous economic growth is possible on a planet with finite resources. This approach promotes broader measures of progress that extend beyond purely financial indicators. For example, Bhutan's Gross National Happiness (GNH) framework evaluates national development by incorporating environmental sustainability, cultural values, and effective governance rather than relying solely on GDP.

**Systems Thinking:** - it is a comprehensive technique to synthesis the impact of how the components of a system is interrelated with each other and how the system work further over time. and how the system works within larger system

**Sustainable Livelihoods Approach:-**The Sustainable Livelihoods Approach focuses on strengthening people's and communities' ability to maintain secure and sustainable living conditions by utilizing their available assets and capacities. It recognizes the interaction of economic, human, social, natural, and physical capital in supporting livelihoods. Practical applications, such as microfinance, education, and sustainable agriculture initiatives in rural India, demonstrate improved income and environmental outcomes. More broadly, sustainable development draws on frameworks like systems thinking, ecological economics, resilience theory, and livelihood sustainability. Together, these perspectives provide a comprehensive foundation for addressing complex development challenges and promoting long-term sustainability.

**Economic Sustainability:** -The process of promoting economic growth and development while making sure that the resources are available for future generations is known as economic sustainability. It entails building robust economic structures that can tolerate shocks, encourage creativity, and uphold social cohesion. The objective is to strike a balance that ensures long-term prosperity and a high standard of living while preventing the depletion of natural resources or irreparable environmental damage from economic activity. An essential component of sustainable economic growth is resource efficiency. This is making the best use of available resources in order to cut down on waste and boost output.

**Renewable Energy Investment :-**Without diminishing natural resources, renewable energy sources like hydropower, solar power, and wind energy offer a steady supply of energy. When compared to fossil fuels, these sources also dramatically lower greenhouse gas emissions. For example, Denmark has become a global leader in wind power production through significant investments in wind energy. Denmark lowers its carbon footprint and promotes economic growth by putting a high priority on renewable energy, which also helps to develop new technologies and create green jobs.

Future generations will have a reliable and sustainable energy source thanks to this strategy

**Sustainable Agriculture:-**Economic sustainability is best demonstrated in India by the use of sustainable farming methods in areas like Sikkim, which has switched to entirely organic farming. Long-term agricultural output is boosted by the greater water retention, more biodiversity, and healthier soils that have resulted from this change. Higher yields and higher prices for organic goods also benefit farmers financially, promoting communal well-being and economic resilience.

**Social Sustainability:-**The goal of social sustainability is to establish communities where people can satisfy their fundamental requirements, feel important, and have opportunity to better their lives. Social equity is a fundamental component of social sustainability, as it guarantees that every person has equal access to resources and opportunities. Reducing disparities in employment, healthcare, education, and income is part of this.

**Environmental Sustainability :-** The idea is based on the knowledge that environmental health and human well-being are inextricably intertwined. This entails acknowledging the limited availability of resources such as pure water, fresh air, and lush soil, as well as the necessity of preserving biodiversity and ecosystem services that sustain life on Earth. A multifaceted strategy that includes conservation initiatives, sustainable farming methods, and the conscientious management of forests, oceans, and other natural areas is necessary for effective environmental sustainability. This also entails shifting from fossil fuels, which exacerbate climate change, to renewable energy sources including hydroelectric, solar, and wind power

#### **4. Challenges and Barriers to Sustainable Development**

Sustainable development faces numerous challenges that complicate the transition toward environmentally responsible and socially equitable systems. A major barrier is the continued economic dependence on fossil fuels and unsustainable production practices that are deeply embedded in global industrial structures. Shifting to renewable energy sources and sustainable materials requires substantial financial investment and often meets resistance from established industries and political actors seeking to maintain existing economic arrangements. Another critical challenge is the lack of effective legislative and regulatory frameworks. In many regions, weak or poorly enforced environmental policies hinder efforts to conserve natural resources and reduce pollution, slowing progress toward sustainability.

Weak enforcement of environmental regulations remains a major barrier to sustainability, while fragmented international legal frameworks create

uneven commitments and effectiveness in addressing climate change. This lack of coordinated global action slows collective progress toward shared environmental goals.

Socioeconomic conditions also significantly hinder sustainable development. Poverty, limited education, and restricted access to technology reduce the capacity of many communities—especially in developing regions—to adopt sustainable practices. As a result, immediate survival needs often take precedence over long-term environmental protection, contributing to continued resource depletion and ecological degradation.

Public awareness and behavioural change present additional challenges. Many individuals and organizations either lack sufficient knowledge about sustainable alternatives or resist altering established consumption patterns. This problem is intensified by misinformation and consumer-driven cultures that promote excessive use of resources.

Overcoming these barriers requires an integrated strategy that combines strong regulatory frameworks, sustained investment in green technologies, international collaboration, and expanded public education initiatives. Coordinated and comprehensive action is essential to remove obstacles to sustainability and to foster a more resilient and environmentally responsible future.

### **5. Future Perspectives:**

The future of sustainable development depends on harnessing technology developments, strengthening international cooperation, and encouraging widespread public participation. Artificial intelligence, Blockchain, and advanced materials science are among the emerging technologies that have the potential to transform how we approach environmental concerns. AI can improve resource management and predict environmental changes, whereas Blockchain can increase supply chain transparency, ensuring sustainable practices. Advances in materials research may lead to the development of ever more sustainable materials, thereby lowering our environmental impact. As these technologies advance, their integration into everyday routines will be critical to achieving considerable progress toward sustainability.

#### **Results**

The analysis identifies several recurring elements that define successful global benchmarks in ecological conservation:

❖ **Integration of conservation and development goals.** Aligning biodiversity objectives with social and economic plans enhances policy coherence and long-term viability. Frameworks that integrate SDGs across sectors produce more balanced outcomes.

❖ **Data-driven performance measurement.** Benchmarking tools and indicators tied to SDG reporting help monitor progress and adapt interventions. Scientific frameworks for linking ecosystem services to SDGs provide quantitative bases for assessing sustainability.

❖ **Community engagement and decentralization.** Approaches that involve local stakeholders and recognize indigenous knowledge improve conservation outcomes and promote sustainable livelihoods. CBMM and other participatory models illustrate the benefits of devolved conservation authority.

❖ **Regional and national examples of sustainable governance.** Benchmarks such as regional SDG performance indexes and innovative national policies show that measurable progress is achievable when context-specific frameworks are applied.

### **Discussion**

**Global Benchmarks: SDGs and Beyond:** The SDG framework remains a cornerstone of global conservation strategy, linking ecological outcomes to human wellbeing. However, research reveals challenges in fully capturing social-ecological resilience within SDG frameworks, particularly regarding cross-scale interactions and adaptive governance. Enhancing resilience within sustainability metrics is vital for managing dynamic ecosystems.

**Nature-Based and Technology-Driven Solutions:** Nature-based solutions (NbS) offer a pathway for achieving multiple SDG targets by leveraging natural processes for climate adaptation and ecosystem enhancement. Evaluation studies show that while NbS contributions to SDGs are promising, their impacts vary by context and require integrated governance to maximize benefits across environmental and social dimensions.

**Community and Local Action:** Case examples like CBMM highlight how decentralizing authority to local communities supports sustainable ecological stewardship while advancing social development goals. Community participation bolsters both biodiversity outcomes and human wellbeing, reflecting broader sustainability objectives.

### **Policy Recommendations**

❖ **Strengthen integration of conservation into development policies** by embedding SDG targets into national planning processes and budget frameworks.

❖ **Enhance performance measurement systems** that monitor ecological and social outcomes, using robust indicators tied to international benchmarks.

❖ **Support participatory governance structures** that engage communities and respect local ecological knowledge.

❖ **Invest in nature-based and technological innovations** to support adaptive management and climate resilience.

❖ **Promote cross-sector collaboration** among government agencies, civil society, and private stakeholders to align conservation and development efforts.

### Conclusion

Global benchmarks such as the SDGs provide essential tools for aligning ecological conservation with sustainable development. Effective implementation relies on integrated planning, evidence-based policy design, community participation, and adaptive governance. Lessons from international experiences underscore the importance of context-specific strategies that account for socio-ecological complexity. By building upon these benchmarks and fostering inclusive pathways, policymakers and practitioners can advance resilient ecosystems and sustainable human development worldwide.

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# The Green Economy: A General Analysis

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## **Abstract**

The green economy is explained as socially inclusive, resource capable and low carbon. A green economy is supported tool to the achievement of sustainable development. Green economy could help to sole the matter of fiscal and environmental issues that affect the world. The green economy plays a pivotal role in the sustainable development of a nation. The government should implement green economic policy like water control, renewable energy, waste management, poverty alleviation etc. The green ideas should be introduced that have positive impact on the trade, business, jobs and agriculture.

**Keywords:** Green economy, challenges, opportunities, key principles

## **Introduction**

The green economy is explained as socially inclusive, resource capable and low carbon. The green economy was the organizing theme of United Nation Rio+20 Conference. A green economy is supported tool to the achievement of sustainable development. The green economy is surprising for environment and financial sector also (Gupta, 2024). The green economy could help to sole the matter of fiscal and environmental issues that affect the world. The thought of green economy is the subject of national and international level. The green economy objective is the enhancement of human welfare and enhancing the public justice and minimizes the risk related to environment as well as preserving ecological resources. This type of economy is fostered by the investment of private as well as public sector to reduce carbon, improve energy power and use of sustainable resources available in the economy (Bharali and Choudhury, 2024). Sustainable developments are categorized in ecological, social and economic. In sustainable development the use of renewable energy like solar, wind, sustainable agriculture like reduce chemical, rotation of crops, water efficiency and recycling. The purpose of the green economy is to create a sustainable economy that used natural resources efficiently without harm the environment (Sarita, 2018).

## **Review of Literature:**

Merdan (2024) examined the relationship between consumption,

renewable energy production, solid waste data and wastewater with the help of econometric methods collecting data from 1980 to 2022. The study also analyzed the impact of the rapid and latest transformation towards green economy on the long-term trajectory of Trukey economic growth. The study found no long-term correlation between economic growth and the variable at 0.05 level of statistical significance.

Meenakshi et al. (2023) focused on Indian green economy key metrics, its potential and progress. The results showed promising trends supported India's ongoing efforts to transition towards a green economy.

Ramana (2024), explored the multifaceted role of the green economy in transforming rural area and encouragement sustainable growth. The study showed that green economy impact was multifaceted and profound on rural development. The integration of sustainable activities in agriculture enhances food security and preserves the natural resources and improved health, powerful local governance show the green economy potential.

Taronva and Uzdenova (2024), explored the transformation of traditional business models to align with the principles of green economy, sustainability integration in to main operation. The result of the study exhibits that enhance economic performance through innovative practices. The study also discussed the policymaker role in encouragement an environment contributing to green investment.

### **Objectives:**

- To know the concept and key principles of green economy
- To know the challenges and opportunities of the green economy

### **Research Methodology:**

The study is based on the published data have been collected from various books, journals, articles etc. The internet is also a very important source of information for the present study.

### **Key Principles of Green Economy:**

(i) The Earth Integrity: The earth has natural environment and ecosystem, functions and process that sustain all beings. So every person has the duty to protect the earth. We should use optimum level of natural resources to minimize environment impact and wastage (Bharali and Choudhury, 2024).

(ii) The self-esteem: Every person who lives on the earth has the right in present and future to livelihood. The main preferences of the governance are redistribution and poverty eradication. The green economy plays a major role for poverty alleviation and hunger eradication (Tien et al., 2020).

(iii) **The fairness:** According to this principle all profit and loss should be distribute equally among the society. The use of goods and services, natural resources, compensate the damage should be equal distributed. Trade and employment mostly affected by the green economy. The green sector is likely to be generating twenty four million jobs by 2030 (Naik, 2021).

(iv) **Protective:** According to this principle that production of new products and technologies do not have negative effect on the human being as well as environment. Adopt precautionary principle to stop the natural resources depletion ecological boundaries (Meenakshi et al., 2023).

(v) **The Governance:** With reference to this principle, prior permission is required for subsidiary democracy. All rules and regulation must be fair and transparent that affected the persons. Appropriate public investment should be driven that is profitable sharing. Develop decision making process.

(vi) **The Resilience:** Diversification and diversity are for quality of life and sustainable development in this context. The commodity minimized dependence based on diversified economy activities. A green economy is helpful for the society in weather climate change and natural calamities (Radha, 2024).

(vii) **The Planetary Boundaries:** This principle explains that the development of human being depends upon the intact ecosystem and that system bound the economic growth. For this fair ecosystem and government rules and regulation must be clear for long term targets.

**Challenges of Green Economy:** The transactions to green economy also present and address these challenges are helpful for sustainable development.

(i) **Technological Challenges:** The adoption of new technologies in the economy is not a very easy task. Due to lack of new technology, lack of knowledge and experts service hindered the growth of the economy and negatively impacts the ecosystem and environment. Technology is largely responsible for big level changes in the society such as urbanization and higher population, less mortality rate and promote to industrial revolution (Velz M and Singhal, 2022).

(ii) **Financial Challenges:** The activities regarding adoption of green economy require a huge amount of finance that is not easy way for the underdeveloped and developing countries. Lack of financial resources also plays major obstacles to implement the policies related to green economy. Developing countries faces financial burden. These types of countries face the issues of funding and initial investment (Sunani, 2025).

(iii) **Rules and regulations:** The developing policies can be challenges

to green economy of those countries in which administrative and political environment are complex.

### **Opportunities of Green Economy:**

**(i) Economic Growth:** The green economy can support and increase economic growth by generating new jobs, industries, renewable energy investment, investment new green technologies and sustainable practices adopted by the business, environmental related opportunities (Bharali and Choudhury, 2024). The geographical condition provides great scope for green economy with largest solar energy in the world. 38 per cent renewable energy is used for electric in India (Bhattacharya and Sachdev, 2021).

**(ii) Environmental Profit:** The green economy provides foundation to reduce pollution, save natural resources, biodiversity protection, helpful for the assistance of health of current and potential population. Green growth policies are needed to support sustainable growth and break down the system of depletion of natural resources and environmental degradation (Devi et al., 2025).

**(iii) Justice and Social Equity:** A green economy provides equal chances to all the sections of the society and equal job opportunities and benefit from the sustainable development.

**(iv) Sustainable Mobility:** In the present time the introduction of modern energy efficient vehicles increases the public transport system. In India the modern time the popular trend in urban area of transportation sector is carpooling platforms (Vani, 2017).

**Conclusion:** The green economy has a pivotal responsibility in the sustainable development of a nation. The growth of a nation includes all dimension of sustainable development such as ecological, social and economic. The economy of a country faces many challenges and has opportunities in modern time. The government should take green economic policy like water control, renewable energy, waste management, poverty alleviation etc. The green ideas should be introduced that have positive impact on the trade, business, jobs and agriculture.

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# The Gurukul System in India: Pedagogy and Relevance in Contemporary Education

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## Abstract

The Gurukul system was the cornerstone of traditional education in ancient India, emphasizing holistic development of the individual through personalized mentorship, residential learning, and moral as well as intellectual training. This research critically reviews its historical foundations, key pedagogical features, strengths and limitations, and its influence and potential integration into modern educational policies. It also examines how old traditions can inform 21st-century learning goals.

## 1. Introduction

Education in ancient India was not limited to rote acquisition of facts but was a comprehensive life preparation process. The **Gurukul system** (from *\*guru\** – teacher and *\*kul\** – household) was a residential model where students (*\*shishyas\**) lived and studied with their teacher (*\*guru\**) in an ashram setting. It prioritized ethical living, spiritual discipline, intellectual growth, and societal duties integrated into the daily routine rather than isolated classroom learning.

## 2. Historical Context

The origins of the Gurukul system trace back to Vedic times (~1500 BCE onward), with extensive mentions in ancient texts and socio-religious traditions. Gurukuls flourished across India as well-respected centers for learning not only scriptures (such as the Vedas and Upanishads) but also logic, arts, sciences, and practical skills relevant to society. During medieval and colonial periods, the Gurukul system gradually declined due to the introduction of Western educational models by colonial administrators, leading to formal classroom schooling and examination-based systems. Recent academic work suggests that this transition marginalized indigenous education structures even as formal systems expanded literacy.

## 3. Pedagogical Foundations of the Gurukul System

### 3.1 Guru–Shishya Relationship

At the heart of the Gurukul model was the close, personal mentorship where knowledge transfer was direct and lived. The guru guided not only academic learning but also moral and ethical conduct.

### **3.2 Residential and Experiential Learning**

Students lived with the guru and participated in daily routines, including chores, rituals, and study, fostering **\*\*learning by doing\*\*** rather than passive instruction.

### **3.3 Curriculum**

The curriculum was holistic, covering:

- \* Spiritual and philosophical studies (Vedas, Upanishads)
- \* Languages and logic
- \* Arts, sciences, and mathematics
- \* Ethical and moral reasoning
- \* Social duties and practical crafts

This blended intellectual, emotional, physical, and spiritual education.

## **4. Critical Features and Strengths**

### **4.1 Holistic Development**

Unlike reductionist, exam-centric methods, the Gurukul system focused on complete personal growth — intellectual, physical, moral, and spiritual.

### **4.2 Community and Character Building**

Close communal living fostered values like cooperation, discipline, self-control, and respect essential for social harmony.

### **4.3 Experiential Learning**

The ashram environment emphasized learning through experience, a principle now widely advocated in modern pedagogy.

## **5. Limitations and Challenges**

While rich in philosophy and depth, the Gurukul system faced limitations:

- \* Access was limited historically (gender and class biases)
- \* Informal, unstandardized pedagogy made scalability difficult
- \* It lacked systematic documentation, exams, and recognised credentials, which modern systems emphasise

These elements hindered its adaptability in a mass-education context during and after colonial reforms.

## **6. Influence on Modern Education and Policy**

Contemporary educational reforms in India, especially under the **\*\*National Education Policy (NEP) 2020\*\***, show a renewed interest in holistic, experiential, and value-based learning. Features such as mentorship, integrated curricula, and character education reflect concepts that resonate with the traditional Gurukul pedagogy. Recent policy initiatives even allow non-formal learners from traditional backgrounds such as Gurukuls to gain access to modern academic pathways, symbolising a bridge between systems.

## **7. Government Policy Regarding Protecting the Gurukul System in India**

The Government of India has taken several steps through education policies, schemes, and institutional initiatives to **protect, revive, and integrate the Gurukul system and traditional Indian knowledge** into modern education. These policies aim to preserve India's ancient educational heritage while adapting it to contemporary needs.

### **(1) National Education Policy (NEP) 2020**

One of the most important government initiatives supporting Gurukul traditions is the **National Education Policy (NEP) 2020**.

- NEP 2020 promotes the **Indian Knowledge Systems (IKS)** such as Sanskrit, Vedic studies, philosophy, Ayurveda, and classical arts.
- It encourages integrating **traditional education models like Gurukuls with modern education**.
- The policy supports teaching **Indian culture, ethics, and traditional knowledge** as part of school and university curricula. (The Economic Times)

The goal is to create an education system that combines **ancient wisdom with modern scientific learning**.

### **(2) Indian Knowledge Systems (IKS) Initiative**

The government has established programs to promote traditional knowledge taught in Gurukuls.

- The **Indian Knowledge Systems (IKS) division** under the Ministry of Education supports research and teaching in ancient Indian disciplines.
- It promotes studies in areas like philosophy, mathematics, astronomy, Ayurveda, linguistics, and traditional sciences.

These programs aim to bring Gurukul knowledge into **mainstream academic institutions**.

### **(3) Setubandha Vidwan Yojana**

A major government scheme to support Gurukul scholars is **Setubandha**

**Vidwan Yojana.**

Key features include:

- Scholars trained in traditional Gurukuls can **join research programs at institutions such as IITs.**
- Students do **not need formal degrees** if they have several years of Gurukul education.
- Fellowships of ' **40,000 to ' 65,000 per month** are provided along with research grants. (The Times of India)

This program helps **bridge traditional Gurukul knowledge with modern scientific research.**

**(4) Support for Sanskrit and Traditional Studies**

The government also promotes the Gurukul tradition through:

- Funding for **Sanskrit universities and institutes**
- Establishment of institutions such as **Central Sanskrit University**
- Encouragement of Vedic and classical studies

These initiatives help **preserve ancient scriptures and traditional education methods.**

**(5) Recognition of Alternative Education Models**

Education reforms also encourage **diverse learning systems**, including:

- Gurukuls
- Pathshalas
- Traditional religious or cultural schools

Policies aim to provide **flexibility in regulations** so that alternative education models can operate while maintaining educational standards.

**(6) Student Welfare and Modernization in Gurukul Schools**

Some state governments have also introduced measures to improve facilities in Gurukul schools, including:

- Installation of **CCTV cameras and safety systems**
- Better sanitation and infrastructure
- Medical checkups and welfare programs for students (The Times of India)

These reforms aim to modernize Gurukul institutions while preserving their traditional educational values.

## 8. Discussion

The Gurukul system remains relevant as a model emphasizing deep mentorship and holistic development aspects that modern education increasingly recognises as essential in preparing learners for complex, real-world challenges. Some scholars argue for \*amalgamation\*, combining disciplined value education with modern scientific curricula. This could address contemporary challenges such as lack of life-skills training, societal disconnect, and fragmented learning outcomes.

## 9. Conclusion

The Gurukul system, rooted in ancient Indian socio-cultural context, offers valuable lessons for contemporary education—particularly around holistic development, mentorship, and character building. Integrating its strengths while addressing its limitations within modern frameworks can help evolve more balanced and human-centred education models for the 21st century. The Indian government recognizes the historical importance of the Gurukul system and is working to preserve it through policies like the **National Education Policy 2020**, research programs, and initiatives such as **Setubandha Vidwan Yojana**. These efforts aim to integrate ancient Indian knowledge with modern education, ensuring that the Gurukul tradition continues to contribute to India's educational and cultural development.

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# India 2047: Development Challenges, Emerging Opportunities and Policy Framework

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## Abstract

The vision of Viksit Bharat 2047 represents India's aspiration to become a fully developed nation by the centenary year of its independence. This vision emphasizes inclusive economic growth, social justice, technological innovation, environmental sustainability, and effective governance. Despite significant progress in recent decades, India continues to face multiple structural challenges such as income inequality, unemployment, skill gaps, infrastructure deficits, and climate vulnerability. At the same time, the country possesses unique opportunities in the form of a demographic dividend, digital transformation, and global integration. This paper analysis the major challenges and opportunities associated with Viksit Bharat 2047 and proposes a phased roadmap to achieve sustainable and inclusive development. The study concludes that coordinated policy reforms, strong institutional capacity, and active participation from all parties are essential to realize the vision of a developed India by 2047.

**Keywords:** Viksit Bharat 2047, economic development, inclusive growth, sustainability, governance

## Introduction

India's journey since independence has been achieved substantial economic, social, and political transformation. From a primarily agriculture based economy, India has emerged as one of the world's fastest-growing major economies. In this context, the vision of Viksit Bharat 2047 seeks to chart a comprehensive pathway for India to attain developed-nation status by its 100th year of independence i.e. 2047. Unlike traditional development goals focused solely on economic growth, this vision emphasizes holistic progress that includes human development, environmental sustainability.

The objective of this paper is to examine the core components of Viksit Bharat 2047 by identifying the key challenges that may hinder progress. the

opportunities that can accelerate development, and a structured roadmap to guide policy and implementation.

**Challenges to Achieving Viksit Bharat 2047**

India faces several challenges that could hinder the realization of its 2047 vision. One of the most significant challenges is employment generation. While economic growth has been robust, job creation has not kept pace with the growing labour force, particularly among youth. Skill mismatches between education outcomes and industry requirements further aggravate this issue.

Social and regional inequalities remain persistent, with disparities in income, education, healthcare, and infrastructure across states and between urban and rural areas. Additionally, environmental challenges such as climate change, air pollution, water scarcity, and land degradation threaten long-term sustainability. Governance challenges, including bureaucratic inefficiencies and uneven policy implementation, also pose obstacles to achieving inclusive and balanced development.

**Table 1: Major Challenges to Achieving Viksit Bharat 2047**

Challenge Area	Key Issues	Impact on Development
Economic growth	Low per-capita income; large informal sector	Slower transition to high-income economy
Employment	Jobless growth; skill mismatch	Demographic dividend underutilized
Social inequality	Income, gender, and regional disparities	Uneven and non-inclusive growth
Education and skills	Quality gaps; outdated curricula	Reduced productivity and innovation
Infrastructure	Urban congestion; rural gaps	Limits industrial and regional growth
Environmental stress	Climate change; pollution; water scarcity	Threats to sustainability
Governance	Weak implementation; delays	Reduced policy effectiveness

**Opportunities for Viksit Bharat 2047**

Despite these challenges, India possesses significant opportunities. The country's young population offers a demographic dividend that can boost productivity if supported by education and skill development. Rapid digitalization, including digital public infrastructure and fintech, provides opportunities to enhance efficiency and inclusion. The growth of MSMEs

and startups fosters innovation, employment, and regional development.

India's increasing integration with global markets, combined with its leadership in renewable energy and emerging technologies, positions the country to play a more prominent role in the global economy.

**Table 2: Key Opportunities for Viksit Bharat 2047**

Opportunity Area	Description	Potential Benefits
Demographic dividend	Large young workforce	Higher growth and innovation
Digital transformation	Digital public infrastructure	Inclusion and efficiency
MSMEs and startups	Entrepreneurial ecosystem	Employment and innovation
Manufacturing	Make in India initiatives	Export growth

### **Roadmap for Achieving Viksit Bharat 2047**

A phased and strategic roadmap is essential for achieving the 2047 vision. In the short term, emphasis should be placed on strengthening infrastructure, expanding digital access, and improving education and skills. The medium term should focus on industrial modernization, urban-rural integration, and institutional reforms. In the long term, India should aim for global leadership in innovation, sustainability, and governance.

**Table 3: Roadmap for Achieving Viksit Bharat 2047**

Phase	Time Period	Focus Areas	Key Actions
Short-term	2025–2030	Foundations	Infrastructure, skilling, inclusion
Medium-term	2031–2040	Transformation	Industrial growth, governance reform
Long-term	2041–2047	Global leadership	Innovation, sustainability

### **Conclusion**

Viksit Bharat 2047 represents a bold and transformative vision for India's future. While the path is complex and filled with challenges, India's demographic strength, technological capabilities, and growing global influence provide a strong foundation for success. With sustained reforms, inclusive policies, and collective national effort, India can achieve its aspiration of becoming a developed, equitable, and sustainable nation by 2047. By addressing key bottlenecks and adopting a phased, evidence-based roadmap, India can unlock its full potential and emerge as a developed, inclusive, and sustainable global leader by 2047.

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# भारत की चार श्रम संहिताएँ: श्रम कानूनों में हुए सुधारों का समग्र एवं आलोचनात्मक विश्लेषण

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भारत में श्रम कानूनों को सरल, एकीकृत तथा वर्तमान समय की आवश्यकताओं के अनुरूप बनाने के उद्देश्य से केंद्र सरकार ने चार श्रम संहिताएँ— वेतन संहिता 2019; औद्योगिक संबंध संहिता 2020; सामाजिक सुरक्षा संहिता 2020; तथा व्यावसायिक सुरक्षा, स्वास्थ्य एवं कार्यदशा संहिता 2020 लागू की हैं। इन संहिताओं के माध्यम से पूर्ववर्ती 29 केंद्रीय श्रम कानूनों को समेकित कर श्रम व्यवस्था को अधिक सरल, पारदर्शी और प्रभावी बनाने का प्रयास किया गया है, जिससे रोजगार संबंधों को नियंत्रित करने हेतु एक अधिक सुसंगत विधिक ढाँचा विकसित हो सके। इसमें श्रमिकों के अधिकार, सामाजिक सुरक्षा, औद्योगिक संबंध, कार्यस्थल की सुरक्षा तथा वेतन से जुड़े प्रमुख प्रावधानों की चर्चा की गई है। साथ ही, इन नए कानूनों का श्रमिकों, नियोक्ताओं और भारतीय श्रम बाजार पर पड़ने वाले संभावित प्रभावों को भी समझाने का प्रयास किया गया है। यह अध्ययन भारत की चारों श्रम संहिताओं का सरल एवं समालोचनात्मक विश्लेषण प्रस्तुत करता है, जिसमें न्यूनतम वेतन, सामाजिक सुरक्षा अधिकार, औद्योगिक संबंध, कार्यस्थल की सुरक्षा तथा व्यावसायिक स्वास्थ्य एवं सुरक्षा मानकों के संदर्भ में श्रमिकों के अधिकारों की रक्षा की प्रभावशीलता का परीक्षण किया गया है। श्रम कानूनों के साथ तुलनात्मक अध्ययन के माध्यम से जहाँ एक ओर इन सुधारों की प्रगतिशील विशेषताओं को रेखांकित किया गया है, वहीं दूसरी ओर ट्रेड यूनियनों की शक्तियों में संभावित कमी, सामूहिक सौदेबाजी अधिकारों की सीमाएँ तथा विभिन्न राज्यों में असमान क्रियान्वयन जैसी विधिक एवं व्यावहारिक चुनौतियों पर भी प्रकाश डाला गया है। अध्ययन से यह स्पष्ट होता है कि ये श्रम संहिताएँ रोजगार सृजन, औद्योगिक स्थिरता और आर्थिक विकास को बढ़ावा देने में सहायक हो सकती हैं, किंतु श्रमिकों, नियोक्ताओं और भारतीय श्रम बाजार पर इनके संतुलित प्रभाव सुनिश्चित करने के लिए प्रभावी क्रियान्वयन, राज्यों की सक्रिय भागीदारी और श्रमिक हितों की समुचित सुरक्षा अत्यंत आवश्यक है।

मुख्य शब्द (Keywords): श्रम संहिताएँ, श्रमिक अधिकार, सामाजिक सुरक्षा, औद्योगिक संबंध, व्यावसायिक सुरक्षा।

## 1. परिचय

### 1.1 भारतीय श्रम कानूनों की पृष्ठभूमि

भारतीय श्रम कानूनों का ढाँचा समय के साथ काफी बदल गया है, जिस पर स्वतंत्रता-

उपरांत परिवर्तनों और देश की औपनिवेशिक पृष्ठभूमि दोनों का प्रभाव रहा है। भारत को एक सशक्त, समृद्ध और आत्मनिर्भर राष्ट्र बनाने के लिए श्रमिकों का सशक्त होना आवश्यक है। आर्थिक सर्वेक्षण 2021-22 के अनुसार, 2019-20 के दौरान भारत में असंगठित क्षेत्र में कार्य करने वाले श्रमिकों की कुल संख्या लगभग 43.99 करोड़ थी। विभिन्न अनुमानों और ई-श्रम पोर्टल के डेटा के अनुसार, असंगठित श्रमिकों की कुल संख्या 38 से 40 करोड़ से अधिक है। लगभग 90 लाख श्रमिक असंगठित क्षेत्र में कार्यरत हैं, जिन्हें स्वतंत्रता के 73 वर्षों बाद भी सभी सामाजिक सुरक्षा सुविधाएँ उपलब्ध नहीं हैं। संगठित और असंगठित दोनों क्षेत्रों को मिलाकर श्रमिकों की कुल संख्या 50 करोड़ से अधिक है। नवीनतम वार्षिक आवधिक श्रम बल सर्वेक्षण (पीएलएफएस) रिपोर्ट में उपलब्ध आंकड़ों के अनुसार, कोविड अवधि सहित पिछले 7 वर्षों के दौरान रोजगार का संकेत देने वाला अनुमानित श्रमिक जनसंख्या अनुपात (डब्ल्यूपीआर) 2017-18 के 46.8 प्रतिशत से बढ़कर 2023-24 में 58.2 प्रतिशत हो गया है। यह पहली बार है कि किसी सरकार ने संगठित और असंगठित दोनों क्षेत्रों के श्रमिकों तथा उनके परिवारों की चिंता की है। नए श्रम संहिताओं के लागू होने से पहले भारत में श्रम कानूनों की व्यवस्था जटिल और खंडित थी, जिसमें 40 से अधिक केंद्रीय कानून और लगभग 200 राज्य कानून शामिल थे। प्रमुख कानूनों में औद्योगिक विवाद अधिनियम, 1947; न्यूनतम वेतन अधिनियम, 1948; वेतन भुगतान अधिनियम, 1936; कारखाना अधिनियम, 1948; और कर्मचारी भविष्य निधि अधिनियम, 1952 शामिल थे। ये कानून वेतन, कार्य परिस्थितियों, सामाजिक सुरक्षा और औद्योगिक विवादों से संबंधित विशिष्ट मुद्दों को संबोधित करने के लिए बनाए गए थे। अनेक श्रम कानूनों की मौजूदगी के कारण प्रावधानों में अक्सर आपसी दोहराव और अस्पष्टता देखने को मिलती थी, जिससे नियोक्ताओं और कर्मचारियों दोनों के लिए उनका अनुपालन करना चुनौतीपूर्ण हो जाता था। इस जटिल और कठोर व्यवस्था को व्यापार सुगमता (Ease of Doing Business) में एक प्रमुख बाधा माना गया, जिसके चलते श्रम कानूनों को अधिक सरल, स्पष्ट और आधुनिक बनाने की आवश्यकता लंबे समय से महसूस की जा रही थी। इसी आवश्यकता को ध्यान में रखते हुए भारत सरकार ने एक महत्वपूर्ण और ऐतिहासिक पहल करते हुए 29 श्रम कानूनों को समाहित कर 4 श्रम संहिताओं का निर्माण किया। इन संहिताओं का उद्देश्य कानूनों को अधिक व्यवस्थित, तार्किक और प्रभावी बनाना था, ताकि श्रमिकों को सम्मानजनक कार्य-परिस्थितियाँ, सुरक्षा, स्वास्थ्य और अन्य कल्याणकारी सुविधाएँ सहज रूप से उपलब्ध हो सकें। परिणामस्वरूप, चार समग्र श्रम संहिताएँ अस्तित्व में आईं।

इस अध्ययन में भारत की नई श्रम संहिताओं का विश्लेषण करने के लिए सरल, गुणात्मक तथा विश्लेषणात्मक शोध पद्धति को अपनाया गया है। शोध के दौरान मुख्य रूप से द्वितीयक स्रोतों से जानकारी एकत्रित की गई और उनका व्यवस्थित अध्ययन व विश्लेषण किया गया। इस अध्ययन के अंतर्गत चार प्रमुख श्रम संहिताओं— वेतन संहिता, 2019; औद्योगिक संबंध संहिता, 2020; सामाजिक सुरक्षा संहिता, 2020; तथा व्यावसायिक सुरक्षा, स्वास्थ्य एवं कार्यदशा संहिता, 2020— के महत्वपूर्ण प्रावधानों, उद्देश्यों और विशेषताओं का अध्ययन किया गया है। अध्ययन के लिए आवश्यक जानकारी विभिन्न विश्वसनीय द्वितीयक स्रोतों से प्राप्त की

गई है, जिनमें मुख्यतः सरकारी दस्तावेज और रिपोर्टें, प्रेस सूचना ब्यूरो (PIB) की आधिकारिक विज्ञप्तियाँ, शोध पत्र और अकादमिक जर्नल, आर्थिक सर्वेक्षण तथा अन्य आधिकारिक सांख्यिकीय आँकड़े शामिल हैं। एकत्रित जानकारी का विश्लेषण करके यह समझने का प्रयास किया गया है कि नई श्रम संहिताओं का श्रमिकों, उद्योगों और देश की अर्थव्यवस्था पर क्या संभावित प्रभाव पड़ सकता है। इस प्रकार, उपलब्ध साहित्य, सरकारी दस्तावेजों और आँकड़ों के आधार पर इस अध्ययन में नई श्रम संहिताओं का सरल, व्यवस्थित और समग्र विश्लेषण प्रस्तुत किया गया है।

चार नई श्रम संहिताओं का परिचय

- वेतन संहिता, 2019 (Code on Wages, 2019)
- औद्योगिक संबंध संहिता, 2020 (Industrial Relations Code, 2020)
- सामाजिक सुरक्षा संहिता, 2020 (Code on Social Security, 2020)
- व्यावसायिक सुरक्षा, स्वास्थ्य एवं कार्यदशा संहिता, 2020 (Occupational Safety, Health and Working Conditions Code, 2020)

इन श्रम संहिताओं का लागू होना भारत की श्रम नियामक व्यवस्था में एक महत्वपूर्ण परिवर्तन को दर्शाता है।

इन कानूनों के समेकन के पीछे मुख्य उद्देश्य निम्नलिखित हैं-

- न्यूनतम वेतन का सार्वभौमीकरण: सभी क्षेत्रों के श्रमिकों के लिए 'न्यूनतम मजदूरी' (Minimum Wage) सुनिश्चित करना और समय पर वेतन भुगतान की गारंटी देना।
- व्यापक सामाजिक सुरक्षा: पीएफ (PF), ईएसआई (ESI), पेंशन और बीमा जैसे लाभों का दायरा बढ़ाकर असंगठित श्रमिकों, गिग वर्कर्स (जैसे डिलीवरी बॉय) और प्लेटफॉर्म श्रमिकों तक पहुँचाना।
- अनुपालन का सरलीकरण (Ease of Compliance): व्यवसायों और विशेष रूप से स्वस्थता के लिए पंजीकरण, रिटर्न और लाइसेंसिंग की प्रक्रिया को डिजिटल बनाकर व्यावसायिक सुगमता को बढ़ावा देना।
- लैंगिक समानता और महिला सुरक्षा: महिलाओं को रात की पाली (Night Shifts) में काम करने की अनुमति देना (सुरक्षा शर्तों के साथ) और भर्ती एवं वेतन में किसी भी भेदभाव को प्रतिबंधित करना।
- कार्यस्थल पर सुरक्षा और स्वास्थ्य: श्रमिकों के लिए सुरक्षित कार्य दशाएं सुनिश्चित करना और स्वास्थ्य जांच (Free Health Checkup) जैसे प्रावधानों के माध्यम से व्यावसायिक सुरक्षा को मजबूत करना।
- श्रमिकों का सशक्तिकरण: नौकरी छूटने की स्थिति में री-स्किलिंग फंड (Reskilling Fund) प्रदान करना ताकि श्रमिक नया कौशल सीखकर दोबारा रोजगार पा सकें।

● ग्रेच्युटी पात्रता में ब्रूट: निश्चित अवधि (Fixed-term) के कर्मचारियों के लिए ग्रेच्युटी की पात्रता को 5 साल से घटाकर 1 साल की सेवा के बाद लागू करना।

इन संहिताओं का उद्देश्य जटिल और पुरानी प्रणाली के स्थान पर एक आधुनिक और अधिक लचीला ढाँचा स्थापित करना है, लेकिन इस पर यह बहस भी जारी है कि क्या ये श्रमिकों के अधिकारों की पर्याप्त रक्षा करती हैं या नियोक्ताओं के पक्ष में झुकाव रखती हैं।

## 2. चार नई श्रम संहिताओं का समय विश्लेषण

### 2.1 वेतन संहिता, 2019

चार केंद्रीय श्रम क़ानूनों को एकीकृत करके वेतन संहिता, 2019 का निर्माण किया गया है, जिसमें कुल 69 धाराएँ सम्मिलित हैं। इस संहिता का प्रमुख उद्देश्य न्यूनतम मजदूरी के लिए विधायी संरक्षण को सुदृढ़ करना तथा पुराने और अप्रचलित श्रम क़ानूनों को अधिक उत्तरदायी, पारदर्शी और प्रभावी क़ानूनी ढाँचे में रूपांतरित करना है। वेतन संहिता, 2019 को श्रम मंत्री श्री संतोष गंगवार द्वारा 23 जुलाई, 2019 को लोकसभा में प्रस्तुत किया गया था। इसका उद्देश्य उन सभी रोजगारों में मजदूरी और बोनस भुगतान को विनियमित करना है जहाँ कोई उद्योग, व्यापार, व्यवसाय या विनिर्माण कार्य किया जाता है। श्रम मंत्री के अनुसार, इस नए क़ानून से देश के लगभग 50 करोड़ श्रमिकों को लाभ होगा। रेलवे, खानों और तेल क्षेत्रों आदि जैसे रोजगारों के लिए वेतन संबंधी निर्णय केंद्र सरकार द्वारा लिए जाएंगे। अन्य सभी रोजगारों के लिए निर्णय राज्य सरकारों द्वारा लिए जाएंगे। वेतन में वेतन, भत्ता या मौद्रिक रूप में व्यक्त कोई भी अन्य घटक शामिल होता है। इसमें कर्मचारियों को देय बोनस या यात्रा भत्ता आदि शामिल नहीं हैं। वेतन संहिता, 2019 वेतन से संबंधित चार प्रमुख केंद्रीय श्रम क़ानूनों के प्रासंगिक प्रावधानों को समेकित, सरल और तर्कसंगत बनाती है, जिनमें मजदूरी भुगतान अधिनियम, (1936), न्यूनतम मजदूरी अधिनियम (1948), बोनस भुगतान अधिनियम (1965), समान पारिश्रमिक अधिनियम (1976) शामिल हैं।

### वेतन संहिता, 2019, की प्रमुख विशेषताएँ

**2.1.1. न्यूनतम वेतन (Floor Wage और Minimum Wage)**– संहिता के अनुसार केंद्र सरकार पूरे देश के लिए फ्लोर वेज (Floor Wage) निर्धारित कर सकती है, जो श्रमिकों के जीवन-स्तर और आर्थिक परिस्थितियों को ध्यान में रखकर तय किया जाता है। विभिन्न भौगोलिक क्षेत्रों के अनुसार अलग-अलग फ्लोर वेज निर्धारित किए जा सकते हैं। फ्लोर वेज तय करने से पहले केंद्र सरकार केंद्रीय सलाहकार बोर्ड की सलाह तथा राज्य सरकारों से परामर्श कर सकती है। राज्य सरकारें अपने क्षेत्रों के लिए न्यूनतम मजदूरी निर्धारित करेंगी, जो केंद्र द्वारा निर्धारित फ्लोर वेज से कम नहीं हो सकती। वेतन में वेतन, भत्ता या मौद्रिक रूप में व्यक्त कोई भी अन्य घटक शामिल होता है। इसमें कर्मचारियों को देय बोनस या यात्रा भत्ता आदि शामिल नहीं हैं।

**2.1.2. न्यूनतम मजदूरी का निर्धारण**– संहिता के अनुसार कोई भी नियोक्ता सरकार

द्वारा निर्धारित न्यूनतम मजदूरी से कम भुगतान नहीं कर सकता। न्यूनतम मजदूरी केंद्र या राज्य सरकार द्वारा अधिसूचित की जाती है और यह समय आधारित (Time Rate) या उत्पादन आधारित (Piece Rate) हो सकती है। न्यूनतम मजदूरी का अधिकतम पाँच वर्षों के भीतर पुनरीक्षण (Revision) और समीक्षा किया जाना आवश्यक है। मजदूरी निर्धारित करते समय सरकार श्रमिकों के कौशल स्तर, कार्य की प्रकृति तथा कार्य की कठिनाई जैसे कारकों को ध्यान में रख सकती है।

**2.1.3. अतिरिक्त समय (Overtime)**— केंद्र या राज्य सरकार सामान्य कार्यदिवस के कार्य-घंटों की सीमा निर्धारित कर सकती है। यदि कोई कर्मचारी निर्धारित कार्य समय से अधिक कार्य करता है, तो उसे सामान्य वेतन दर से कम से कम दोगुना ओवरटाइम भुगतान प्राप्त करने का अधिकार होगा।

**2.1.4. मजदूरी का भुगतान**— संहिता के अनुसार मजदूरी का भुगतान सिक्कों, करेंसी नोटों, चेक, बैंक खाते में जमा या इलेक्ट्रॉनिक माध्यम से किया जा सकता है। मजदूरी अवधि नियोक्ता द्वारा दैनिक, साप्ताहिक, पाक्षिक या मासिक आधार पर निर्धारित की जा सकती है, तथा मजदूरी का भुगतान समय पर किया जाना अनिवार्य है।

**2.1.5. वेतन में कटौती**— संहिता के प्रावधानों के अनुसार कुछ विशेष परिस्थितियों में कर्मचारी के वेतन से कटौती की अनुमति दी गई है। इनमें मुख्य रूप से जुर्माना, कार्य से अनुपस्थिति, नियोक्ता द्वारा प्रदान की गई सुविधाओं का उपयोग, तथा कर्मचारी को दिए गए अग्रिम की वसूली जैसी स्थितियाँ शामिल हैं। तथापि, यह भी सुनिश्चित किया गया है कि किसी भी स्थिति में कुल कटौती कर्मचारी के कुल वेतन के 50 प्रतिशत से अधिक नहीं हो सकती।

**2.1.6. बोनस का प्रावधान**— संहिता के अंतर्गत वे कर्मचारी जिनका वेतन सरकार द्वारा निर्धारित सीमा के भीतर है, वार्षिक बोनस के पात्र होंगे। बोनस की न्यूनतम दर वेतन का 8.33% या 100 रुपये (जो अधिक हो) निर्धारित की गई है, जबकि अधिकतम बोनस कर्मचारी के वार्षिक वेतन का 20% तक हो सकता है। नियोक्ता अपने लाभ का एक भाग कर्मचारियों में उनके वेतन के अनुपात में वितरित कर सकता है।

**2.1.7. लिंगभेद का निषेध**— संहिता समान कार्य या समान प्रकृति के कार्य के लिए पुरुष और महिला कर्मचारियों को समान वेतन देने का प्रावधान करती है तथा भर्ती और वेतन निर्धारण से संबंधित मामलों में लिंग आधारित भेदभाव को प्रतिबंधित करती है।

**2.1.8. सलाहकार बोर्ड**— संहिता के अंतर्गत केंद्र और राज्य सरकारें सलाहकार बोर्डों का गठन करती हैं। केंद्रीय सलाहकार बोर्ड में नियोक्ता, कर्मचारी, स्वतंत्र सदस्य तथा राज्य सरकारों के प्रतिनिधि शामिल होते हैं। इन बोर्डों के कुल सदस्यों में से कम से कम एक-तिहाई महिलाएँ होती हैं। इनका मुख्य कार्य सरकार को न्यूनतम मजदूरी निर्धारण और महिलाओं के रोजगार के अवसर बढ़ाने जैसे विषयों पर सलाह देना है।

**2.1.9. अपराध और दंड**— यदि कोई नियोक्ता संहिता के प्रावधानों का उल्लंघन करता है,

जैसे निर्धारित वेतन से कम भुगतान करना या अन्य नियमों का पालन न करना, तो उसके लिए दंड का प्रावधान है। अपराध की प्रकृति के आधार पर अधिकतम तीन महीने की कारावास और एक लाख रुपये तक का जुर्माना लगाया जा सकता है।

## 2.2 औद्योगिक संबंध संहिता, 2020

औद्योगिक संबंध संहिता, 2020 भारत में श्रम कानूनों को सरल और एकीकृत बनाने के उद्देश्य से लागू की गई एक महत्वपूर्ण संहिता है। इसका उद्देश्य नियोक्ताओं और कर्मचारियों के बीच संतुलित संबंध स्थापित करना, औद्योगिक विवादों को कम करना तथा कार्यस्थल पर औद्योगिक शांति बनाए रखना है। इस संहिता के अंतर्गत तीन प्रमुख कानून- औद्योगिक विवाद अधिनियम, 1947; ट्रेड यूनियन अधिनियम, 1926; और औद्योगिक रोजगार (स्थायी आदेश) अधिनियम, 1946- को एकीकृत किया गया है, जिससे श्रम कानूनों की जटिलता कम हो सके।

संहिता में ट्रेड यूनियनों की मान्यता से संबंधित स्पष्ट प्रावधान किए गए हैं। यदि किसी प्रतिष्ठान में केवल एक ट्रेड यूनियन है तो उसे कर्मचारियों की वार्ता करने वाली यूनियन के रूप में मान्यता दी जाती है। यदि एक से अधिक यूनियन हों, तो कर्मचारियों के पर्याप्त समर्थन वाली यूनियन को मान्यता दी जा सकती है। इससे सामूहिक सौदेबाजी की प्रक्रिया अधिक व्यवस्थित और प्रभावी बनती है।

इस संहिता में अनुचित श्रम व्यवहार को भी परिभाषित किया गया है तथा नियोक्ताओं और कर्मचारियों दोनों को ऐसे व्यवहार से प्रतिबंधित किया गया है। इसके अतिरिक्त, जिन औद्योगिक प्रतिष्ठानों में 300 या उससे अधिक कर्मचारी कार्यरत हैं, उन्हें सेवा शर्तों, कार्य-घंटों और अनुशासन से संबंधित स्थायी आदेश बनाना अनिवार्य है। संहिता में छंटनी, कामबंदी और प्रतिष्ठान बंद करने से संबंधित नियम भी निर्धारित किए गए हैं। 300 या उससे अधिक कर्मचारियों वाले प्रतिष्ठानों को इन स्थितियों में सरकार की पूर्व अनुमति लेनी होती है। साथ ही औद्योगिक विवादों के समाधान के लिए सुलह अधिकारी, मध्यस्थता और औद्योगिक न्यायाधिकरण जैसी व्यवस्थाएँ प्रदान की गई हैं।

इस प्रकार, औद्योगिक संबंध संहिता, 2020 श्रमिकों के अधिकारों की रक्षा करते हुए औद्योगिक विकास और व्यवसायिक सुगमता को बढ़ावा देने का प्रयास करती है।

### औद्योगिक संबंध ( IR ) संहिता, 2020 की प्रमुख विशेषताएँ

**औद्योगिक संबंध संहिता, 2020 की प्रमुख विशेषताएँ ( Features ) –** प्रासंगिक आँकड़ों सहित निम्न प्रकार से प्रस्तुत की जा सकती हैं-

**2.2.1. तीन प्रमुख श्रम कानूनों का एकीकरण-** औद्योगिक संबंध संहिता, 2020 ने पहले से लागू तीन प्रमुख श्रम कानूनों- औद्योगिक विवाद अधिनियम, 1947, ट्रेड यूनियन अधिनियम, 1926 तथा औद्योगिक रोजगार (स्थायी आदेश) अधिनियम, 1946- को एकीकृत किया है। इससे औद्योगिक संबंधों से जुड़े कानूनों को सरल और एकरूप बनाया गया है तथा अनुपालन की प्रक्रिया को आसान किया गया है।

**2.2.2. ट्रेड यूनियन के पंजीकरण की व्यवस्था**—संहिता के अनुसार कम से कम 7 कर्मचारी मिलकर ट्रेड यूनियन के पंजीकरण के लिए आवेदन कर सकते हैं। इसके अतिरिक्त, पंजीकरण के लिए यह आवश्यक है कि संबंधित प्रतिष्ठान के कुल कर्मचारियों का कम से कम 10% या 100 कर्मचारी (जो भी कम हो) उस यूनियन के सदस्य हों। इससे ट्रेड यूनियनों की वैधता और प्रतिनिधित्व सुनिश्चित होता है।

**2.2.3. नेगोशिएटिंग यूनियन/कार्सिल का प्रावधान**—यदि किसी प्रतिष्ठान में एक से अधिक ट्रेड यूनियन हैं, तो जिस यूनियन के पास कम से कम 51% कर्मचारियों का समर्थन होगा, उसे Negotiating Union के रूप में मान्यता दी जाएगी। यदि कोई यूनियन 51% समर्थन प्राप्त नहीं करती है, तो विभिन्न यूनियनों के प्रतिनिधियों से Negotiating Council का गठन किया जाएगा।

**2.2.4. स्थायी आदेश ( Standing Orders )**—संहिता के अनुसार जिन औद्योगिक प्रतिष्ठानों में 300 या उससे अधिक कर्मचारी कार्यरत हैं, उन्हें कर्मचारियों की सेवा शर्तों, कार्य-घंटों, अवकाश और अनुशासन से संबंधित Standing Orders तैयार करना अनिवार्य होगा। पहले यह सीमा 100 कर्मचारियों की थी, जिसे बढ़ाकर 300 किया गया है।

**2.2.5. हड़ताल और तालाबंदी के नियम**—संहिता के अंतर्गत कर्मचारियों को हड़ताल करने से पहले नियोक्ता को कम से कम 14 दिन का नोटिस देना अनिवार्य है और यह नोटिस 60 दिनों के भीतर ही मान्य रहेगा। इसी प्रकार नियोक्ता द्वारा तालाबंदी करने से पहले भी समान नियम लागू होंगे। इसका उद्देश्य अचानक औद्योगिक विवादों को रोकना है।

**2.2.6. छंटनी, कामबंदी और प्रतिष्ठान बंद करने के प्रावधान**—जिन गैर-मौसमी औद्योगिक प्रतिष्ठानों में 300 या उससे अधिक कर्मचारी कार्यरत हैं, वहाँ कर्मचारियों की छंटनी, कामबंदी या प्रतिष्ठान बंद करने से पहले सरकार की पूर्व अनुमति लेना आवश्यक है। यह प्रावधान औद्योगिक स्थिरता बनाए रखने के लिए महत्वपूर्ण है।

**2.2.7. औद्योगिक विवादों के समाधान की व्यवस्था**—संहिता में औद्योगिक विवादों के समाधान के लिए Conciliation Officer, Industrial Tribunal और National Industrial Tribunal जैसी संस्थाओं की व्यवस्था की गई है। औद्योगिक न्यायाधिकरण में एक न्यायिक सदस्य और एक प्रशासनिक सदस्य होते हैं, जो श्रम विवादों के समाधान में सहायता करते हैं।

**2.2.8. अनुचित श्रम व्यवहार ( unfair Labour Practices ) का निषेध**—संहिता नियोक्ताओं और कर्मचारियों दोनों को अनुचित श्रम व्यवहार से रोकती है, जैसे कर्मचारियों को ट्रेड यूनियन बनाने से रोकना, किसी कर्मचारी को यूनियन सदस्यता के आधार पर भेदभाव करना या कर्मचारियों को जबरन हड़ताल के लिए बाध्य करना।

**2.2.9. पुनः कौशल विकास कोष ( Re-skilling Fund )**—संहिता में Re-skilling Fund की स्थापना का प्रावधान किया गया है, जिसका उद्देश्य नौकरी से निकाले गए कर्मचारियों

को नए कौशल का प्रशिक्षण देना है। इस कोष में नियोक्ता द्वारा प्रत्येक हटाए गए कर्मचारी के लिए उसके 15 दिनों के वेतन के बराबर राशि जमा की जाएगी।

**2.2.10. अपराध और दंड-** औद्योगिक संबंध संहिता 2020 के तहत अपराध और दंड के प्रावधानों को काफी सख्त बनाया गया है, जहाँ अवैध हड़ताल में शामिल होने वाले श्रमिकों पर ₹ 1,000 से ₹ 10,000 तक का जुर्माना या एक महीने की जेल हो सकती है, वहीं अवैध तालाबंदी (Lockout) करने वाले नियोक्ताओं पर ₹ 50,000 से ₹ 1,00,000 तक का दंड निर्धारित है। संहिता के अनुसार, 300 से अधिक कर्मचारियों वाले संस्थानों में बिना सरकारी अनुमति के छंटनी या बंदी करने पर नियोक्ताओं पर ₹ 1 लाख से ₹ 10 लाख तक का भारी जुर्माना लगाया जा सकता है, जबकि अनुचित श्रम प्रथाओं (Unfair Labour Practices) के लिए ₹ 10,000 से ₹ 2 लाख तक के दंड का प्रावधान है। इसके अतिरिक्त, न्यायाधिकरण (Tribunal) के आदेशों का उल्लंघन करने पर ₹ 20,000 से ₹ 2 लाख तक का जुर्माना हो सकता है और बार-बार अपराध करने पर इन राशियों को दोगुना करने तथा कुछ मामलों में 'कंपाउंडिंग' (जुर्माना भरकर मामला सुलझाने) की सुविधा भी दी गई है।

### 2.3 सामाजिक सुरक्षा संहिता, 2020

सामाजिक सुरक्षा संहिता, 2020 भारत के श्रम कल्याण तंत्र में एक महत्वपूर्ण सुधार के रूप में उभरी है, जिसका उद्देश्य कार्यबल के सभी वर्गों को व्यापक और समावेशी सामाजिक सुरक्षा प्रदान करना है। यह संहिता पहले से लागू नौ अलग-अलग सामाजिक सुरक्षा कानूनों को एकीकृत करके एक सुव्यवस्थित कानूनी ढांचा प्रस्तुत करती है, जो संगठित, असंगठित, गिग तथा प्लेटफॉर्म श्रमिकों सभी को समान रूप से संरक्षण प्रदान करने का प्रयास करती है। विभिन्न श्रम कानूनों को एक ही ढांचे में समाहित करने के माध्यम से यह संहिता अनुपालन प्रक्रिया को सरल बनाने, प्रशासनिक कार्यकुशलता को बढ़ाने तथा जीवन और विकलांगता बीमा, स्वास्थ्य एवं मातृत्व लाभ, भविष्य निधि और ग्रेच्युटी जैसे सामाजिक सुरक्षा लाभों की उपलब्धता को व्यापक बनाने का प्रयास करती है। इसके साथ-साथ संहिता पारदर्शिता और प्रभावी क्रियान्वयन सुनिश्चित करने के लिए डिजिटल प्रणालियों तथा सुदृढ़ सुविधा तंत्र को भी प्रोत्साहित करती है, जिससे नियोक्ताओं और कर्मचारियों दोनों को सहयोग मिल सके।

यह संहिता भारत में सामाजिक सुरक्षा से संबंधित कानूनों को संशोधित और समेकित करने के उद्देश्य से बनाई गई है, ताकि संगठित और असंगठित दोनों क्षेत्रों में कार्यरत श्रमिकों को सामाजिक सुरक्षा उपलब्ध कराई जा सके। विशेष रूप से, यह असंगठित क्षेत्र, गिग वर्कर्स और प्लेटफॉर्म वर्कर्स को जीवन बीमा, विकलांगता बीमा, स्वास्थ्य सेवाएँ, मातृत्व लाभ, भविष्य निधि, पेंशन और कौशल उन्नयन जैसी सामाजिक सुरक्षा योजनाओं के दायरे में लाती है।

इस संहिता के अंतर्गत सामाजिक सुरक्षा से संबंधित नौ केंद्रीय श्रम अधिनियमों- जैसे कर्मचारी मुआवजा अधिनियम, 1923; कर्मचारी राज्य बीमा अधिनियम, 1948; कर्मचारी भविष्य निधि और विविध प्रावधान अधिनियम, 1952; रोजगार एक्सचेंज अधिनियम, 1959; मातृत्व लाभ अधिनियम, 1961; ग्रेच्युटी भुगतान अधिनियम, 1972; सिने वर्कर्स वेलफेयर

फंड अधिनियम, 1981; भवन एवं अन्य निर्माण श्रमिक कल्याण उपकर अधिनियम, 1996; तथा असंगठित श्रमिक सामाजिक सुरक्षा अधिनियम, 2008- को एकीकृत किया गया है।

### सामाजिक सुरक्षा संहिता, 2020 की प्रमुख विशेषताएँ:

**2.3.1. नौ श्रम कानूनों का समेकन-** सामाजिक सुरक्षा संहिता, 2020 का प्रमुख उद्देश्य सामाजिक सुरक्षा से संबंधित विभिन्न कानूनों को एकीकृत करना है। इस संहिता के अंतर्गत नौ केंद्रीय श्रम कानूनों को समाहित किया गया है, जिससे श्रम कानूनों की जटिलता कम हुई है और एक सरल तथा एकीकृत कानूनी ढाँचा स्थापित हुआ है। इससे प्रशासनिक प्रक्रिया अधिक प्रभावी और पारदर्शी बनती है।

**2.3.2. सभी श्रमिक वर्गों को सामाजिक सुरक्षा-** यह संहिता संगठित और असंगठित दोनों क्षेत्रों के श्रमिकों को सामाजिक सुरक्षा के दायरे में लाती है। इसके अतिरिक्त, पहली बार गिग वर्कर्स और प्लेटफॉर्म वर्कर्स को भी सामाजिक सुरक्षा योजनाओं में शामिल किया गया है। इससे बड़ी संख्या में श्रमिकों को जीवन बीमा, स्वास्थ्य सुविधा, मातृत्व लाभ, भविष्य निधि और पेंशन जैसे लाभ प्राप्त हो सकते हैं।

**2.3.3. सामाजिक सुरक्षा कोष और बोर्ड का गठन-** संहिता के अंतर्गत राष्ट्रीय सामाजिक सुरक्षा बोर्ड तथा राज्य स्तर पर असंगठित श्रमिक सामाजिक सुरक्षा बोर्ड के गठन का प्रावधान किया गया है। इसके साथ ही असंगठित, गिग और प्लेटफॉर्म श्रमिकों के कल्याण के लिए सामाजिक सुरक्षा कोष (Social Security Fund) की स्थापना की गई है, जिससे विभिन्न सामाजिक सुरक्षा योजनाओं को लागू किया जा सके।

**2.3.4. असंगठित श्रमिकों का राष्ट्रीय पंजीकरण-** संहिता के अंतर्गत असंगठित श्रमिकों, गिग वर्कर्स और प्लेटफॉर्म वर्कर्स के लिए राष्ट्रीय डेटाबेस और पंजीकरण प्रणाली की व्यवस्था की गई है। पंजीकरण के बाद प्रत्येक श्रमिक को एक यूनिक पहचान संख्या (Unique Identification Number) प्रदान की जाएगी, जिससे उन्हें देश के किसी भी भाग में सामाजिक सुरक्षा योजनाओं का लाभ प्राप्त हो सके।

**2.3.5. भविष्य निधि और कर्मचारी राज्य बीमा का विस्तार-** संहिता के अंतर्गत Employees' Provident Fund (EPF) और Employees' State Insurance (ESI) जैसी योजनाओं का दायरा बढ़ाया गया है। 20 या उससे अधिक कर्मचारियों वाले प्रतिष्ठानों को भविष्य निधि योजना के अंतर्गत लाया गया है तथा श्रद्धा योजना को पूरे देश में लागू करने का प्रावधान किया गया है।

**2.3.6. महिलाओं के लिए विशेष प्रावधान-** संहिता में महिलाओं के लिए कई महत्वपूर्ण प्रावधान किए गए हैं, जैसे- 26 सप्ताह का मातृत्व अवकाश, कार्य की प्रकृति के अनुसार वर्क फ्रॉम होम की सुविधा, 50 या उससे अधिक कर्मचारियों वाले प्रतिष्ठानों में क्रेच (Crèche) सुविधा, प्रसव से संबंधित चिकित्सा सुविधाएँ और बोनस। ये प्रावधान महिलाओं की कार्यस्थल भागीदारी को बढ़ाने में सहायक हैं।

**2.3.7. डिजिटल प्रणाली और पारदर्शिता-** संहिता के अंतर्गत सभी रिकॉर्ड, रजिस्टर और रिटर्न को डिजिटल माध्यम से बनाए रखने का प्रावधान किया गया है। इससे प्रशासनिक प्रक्रिया सरल होगी, अनुपालन लागत कम होगी और पारदर्शिता बढ़ेगी।

**2.3.8. निरीक्षक-सह-सुविधादाता ( Inspector-cum-Facilitator ) प्रणाली-** संहिता में पारंपरिक निरीक्षण प्रणाली के स्थान पर Inspector-cum-Facilitator की व्यवस्था की गई है। इसका उद्देश्य केवल निरीक्षण करना नहीं बल्कि नियोक्ताओं को कानूनों के पालन में मार्गदर्शन देना भी है, जिससे श्रम संबंधों में सहयोग और पारदर्शिता बढ़ेगी।

## 2.4 व्यावसायिक सुरक्षा, स्वास्थ्य एवं कार्यदशा संहिता, 2020

भारत में श्रम कानूनों को सरल, एकीकृत और आधुनिक बनाने के उद्देश्य से केंद्र सरकार ने व्यापक श्रम सुधारों के तहत व्यावसायिक सुरक्षा, स्वास्थ्य एवं कार्यदशा संहिता, 2020 को लागू किया है। यह संहिता पहले से प्रचलित 13 केंद्रीय श्रम कानूनों को समाहित करके एक समग्र और एकीकृत कानून के रूप में प्रस्तुत की गई है। इसका मुख्य उद्देश्य श्रमिकों को सुरक्षित कार्यस्थल, बेहतर स्वास्थ्य सुविधाएँ तथा मानवीय कार्य परिस्थितियाँ प्रदान करना है। साथ ही यह संहिता उद्योगों के लिए नियमों को सरल बनाकर पारदर्शिता बढ़ाने और व्यापार सुगमता (Ease of Doing Business) को प्रोत्साहित करने का भी प्रयास करती है। इस संहिता के माध्यम से श्रमिकों के अधिकारों की रक्षा, सामाजिक सुरक्षा की उपलब्धता और रोजगार के अवसरों को बढ़ाने की दिशा में महत्वपूर्ण कदम उठाए गए हैं, जिससे भारत के श्रम बाजार को अधिक सुरक्षित, न्यायसंगत और आधुनिक बनाया जा सके।

### मुख्य विशेषताएँ (Main Features)

श्रम कानूनों का एकीकरण-इस संहिता के माध्यम से 13 अलग-अलग केंद्रीय श्रम कानूनों को एक ही व्यापक कानून में समाहित किया गया है, जिससे श्रम कानूनों की जटिलता कम हुई है और एक समान व्यवस्था स्थापित हुई है।

सुरक्षित और स्वस्थ कार्यस्थल-श्रमिकों के स्वास्थ्य, सुरक्षा और कल्याण के लिए कार्यस्थलों पर स्वच्छता, सुरक्षा उपकरण, चिकित्सा सुविधा और अन्य आवश्यक व्यवस्थाएँ अनिवार्य की गई हैं।

कार्य के घंटे और ओवरटाइम का प्रावधान-किसी भी कर्मचारी से प्रतिदिन 8 घंटे और सप्ताह में 48 घंटे से अधिक कार्य नहीं कराया जा सकता। अतिरिक्त कार्य के लिए ओवरटाइम का भुगतान दोगुनी दर से किया जाता है।

नियुक्ति पत्र (Appointment Letter) की अनिवार्यता-प्रत्येक कर्मचारी को नियुक्ति पत्र देना अनिवार्य किया गया है, जिसमें पद, वेतन, कार्य की शर्तें और सामाजिक सुरक्षा से संबंधित विवरण शामिल होंगे।

अंतर-राज्यीय प्रवासी श्रमिकों के लिए प्रावधान-प्रवासी श्रमिकों के पंजीकरण, उनके

अधिकारों की सुरक्षा तथा वर्ष में एक बार अपने गृह राज्य जाने के लिए यात्रा भत्ता प्रदान करने का प्रावधान किया गया है।

महिला श्रमिकों के लिए विशेष प्रावधान-महिलाओं को सभी प्रकार के प्रतिष्ठानों में कार्य करने की अनुमति दी गई है और उनकी सहमति से रात्रि पाली में भी काम करने की व्यवस्था की गई है, बशर्ते उनकी सुरक्षा सुनिश्चित की जाए।

सुरक्षा समितियों का गठन-बड़े प्रतिष्ठानों में श्रमिकों और नियोजकों के प्रतिनिधियों से मिलकर सुरक्षा समितियों का गठन किया जाएगा ताकि कार्यस्थल की सुरक्षा सुनिश्चित की जा सके।

डिजिटल पंजीकरण और एकल लाइसेंस प्रणाली-इस संहिता में इलेक्ट्रॉनिक पंजीकरण, एकल लाइसेंस और एकल रिटर्न की व्यवस्था की गई है, जिससे प्रशासनिक प्रक्रियाएँ सरल हो जाती हैं।

राष्ट्रीय व्यावसायिक सुरक्षा और स्वास्थ्य सलाहकार बोर्ड-कार्यस्थलों के लिए राष्ट्रीय स्तर पर सुरक्षा और स्वास्थ्य मानकों को निर्धारित करने हेतु एक राष्ट्रीय सलाहकार बोर्ड का गठन किया गया है।

सामाजिक सुरक्षा कोष की स्थापना-असंगठित क्षेत्र के श्रमिकों के कल्याण के लिए एक सामाजिक सुरक्षा कोष स्थापित करने का प्रावधान किया गया है।

### 3. आर्थिक और सामाजिक दोनों क्षेत्रों पर व्यापक प्रभाव

श्रम संहिताओं का उद्देश्य श्रम कानूनों को सरल बनाना, निवेश को बढ़ाना और श्रमिकों को सामाजिक सुरक्षा प्रदान करना है। इन सुधारों का आर्थिक और सामाजिक दोनों क्षेत्रों पर व्यापक प्रभाव पड़ा है।

#### 3.1. श्रम सुधारों का आर्थिक प्रभाव

3.1.1. रोजगार सृजन में वृद्धि-नए श्रम सुधारों का मुख्य लक्ष्य देश में रोजगार के अवसरों का विस्तार करना है। एक अध्ययन के अनुसार इन सुधारों के परिणामस्वरूप लगभग 77 लाख नए रोजगार सृजित होने की संभावना है। इसके साथ ही बेरोजगारी दर में भी लगभग 1.3 प्रतिशत तक कमी आ सकती है (The Financial Express)। ये सुधार उद्योगों को श्रम से संबंधित नियमों में अधिक लचीलापन प्रदान करते हैं, जिससे कंपनियाँ अपनी आवश्यकताओं के अनुसार कार्यबल का विस्तार कर सकती हैं और अधिक कर्मचारियों की नियुक्ति के लिए प्रोत्साहित होती हैं।

3.1.2. औपचारिक रोजगार ( Formalisation ) में वृद्धि- भारत में श्रमिकों की एक बड़ी संख्या असंगठित क्षेत्र में कार्यरत है, जो देश के श्रम बाजार का महत्वपूर्ण हिस्सा है। उपलब्ध आंकड़ों के अनुसार भारत में लगभग 44 करोड़ श्रमिक असंगठित क्षेत्र में कार्य करते हैं (Deccan Chronicle)। इनमें से 31 करोड़ से अधिक श्रमिक e-Shram पोर्टल पर

पंजीकरण करा चुके हैं (ETHRWorld.com)। अनुमान लगाया जा रहा है कि नई श्रम संहिताओं के प्रभावी क्रियान्वयन के बाद श्रम बाजार में औपचारिकता बढ़ेगी। इसके परिणामस्वरूप औपचारिक क्षेत्र में कार्यरत श्रमिकों का अनुपात 60.4 प्रतिशत से बढ़कर लगभग 75.5 प्रतिशत तक पहुँच सकता है (Deccan Chronicle)। साथ ही, इससे श्रमिकों के लिए उपलब्ध सामाजिक सुरक्षा योजनाओं का दायरा भी लगभग 80-85 प्रतिशत तक विस्तारित होने की संभावना है (The Week)।

3.1.3. आर्थिक विकास और उत्पादन में वृद्धि- श्रम सुधारों के परिणामस्वरूप उत्पादकता और सकल घरेलू उत्पाद (GDP) पर सकारात्मक प्रभाव पड़ने की संभावना व्यक्त की जाती है। उपलब्ध आंकड़ों के अनुसार औपचारिक क्षेत्र का एक श्रमिक औसतन लगभग ₹12 लाख का वार्षिक सकल मूल्य वर्धन (GVA) उत्पन्न करता है, जबकि अनौपचारिक क्षेत्र में यह लगभग ₹1.5 लाख के आसपास रहता है (policyprism@w.in)। यदि बड़ी संख्या में श्रमिक औपचारिक क्षेत्र में सम्मिलित होते हैं, तो इससे देश की तृष्णक में उल्लेखनीय वृद्धि संभव है। इस प्रकार श्रम सुधार उत्पादन क्षमता में वृद्धि, निवेश को प्रोत्साहन और औद्योगिक विकास को गति देने में महत्वपूर्ण भूमिका निभा सकते हैं।

3.1.4. उपभोग और मांग में वृद्धि- अनुमान है कि श्रम सुधारों के परिणामस्वरूप श्रमिकों की आय में वृद्धि और सामाजिक सुरक्षा के दायरे के विस्तार से लगभग ₹75,000 करोड़ तक अतिरिक्त उपभोग में बढ़ोतरी हो सकती है (ETHRWorld.com)। उपभोग में यह वृद्धि अर्थव्यवस्था पर सकारात्मक प्रभाव डालती है। इसके परिणामस्वरूप घरेलू मांग में वृद्धि होती है, आर्थिक गतिविधियाँ अधिक सक्रिय होती हैं और उद्योग तथा सेवा क्षेत्र के विस्तार को भी प्रोत्साहन मिलता है।

## 3.2. श्रम सुधारों का सामाजिक प्रभाव

3.2.1. सामाजिक सुरक्षा का विस्तार- नई श्रम संहिताओं के अंतर्गत पहली बार विभिन्न नए श्रमिक वर्गों को सामाजिक सुरक्षा के दायरे में शामिल करने का प्रयास किया गया है। इनमें विशेष रूप से गिग और प्लेटफॉर्म श्रमिक, असंगठित क्षेत्र के श्रमिक तथा अस्थायी और संविदा कर्मचारी शामिल हैं। इन प्रावधानों के माध्यम से श्रमिकों को पेंशन, स्वास्थ्य बीमा, मातृत्व लाभ तथा दुर्घटना बीमा जैसी सामाजिक सुरक्षा सुविधाएँ उपलब्ध कराने की व्यवस्था की गई है (Reuters)।

3.2.2. महिलाओं के लिए अवसरों में वृद्धि- श्रम सुधारों के अंतर्गत महिलाओं को रोजगार के क्षेत्र में अधिक अवसर प्रदान करने के लिए महत्वपूर्ण प्रावधान किए गए हैं। इन सुधारों के अनुसार महिलाओं को सभी प्रकार के प्रतिष्ठानों में कार्य करने की अनुमति दी गई है तथा आवश्यक सुरक्षा प्रबंधों के साथ उन्हें रात्रि पाली में काम करने का अधिकार भी प्रदान किया गया है। इसके अतिरिक्त मातृत्व अवकाश और समान वेतन से संबंधित प्रावधानों को भी और अधिक सुदृढ़ बनाया गया है (Reuters)। इन उपायों से महिलाओं की कार्यबल में भागीदारी बढ़ने की संभावना व्यक्त की जाती है।

**3.2.3. श्रमिकों के कार्यस्थल की सुरक्षा-** नई श्रम संहिता के अंतर्गत कार्यस्थलों पर स्वास्थ्य और सुरक्षा से संबंधित प्रावधानों को अधिक सुदृढ़ बनाया गया है। इसके तहत कर्मचारियों के लिए नियमित स्वास्थ्य जांच जैसी सुविधाओं की व्यवस्था भी की गई है (Reuters)। इन प्रावधानों के परिणामस्वरूप श्रमिकों के स्वास्थ्य, सुरक्षा तथा कार्य परिस्थितियों में सुधार होने की संभावना बढ़ जाती है।

**3.2.4 सामाजिक न्याय और समावेशन-** श्रम सुधारों का एक महत्वपूर्ण सामाजिक प्रभाव यह है कि पहली बार गिग और प्लेटफॉर्म श्रमिकों को कानूनी मान्यता प्रदान की गई है। इसके परिणामस्वरूप डिजिटल अर्थव्यवस्था से जुड़े श्रमिकों को भी विभिन्न कल्याणकारी योजनाओं और सामाजिक सुरक्षा लाभों तक पहुँच प्राप्त हो सकती है। (ETHRWorld.com)

#### 4. श्रम संहिताओं की चुनौतियाँ और आलोचनात्मक विश्लेषण

भारत सरकार ने श्रम कानूनों को सरल और एकीकृत बनाने के उद्देश्य से चार नई श्रम संहिताएँ लागू की हैं- इन संहिताओं का उद्देश्य श्रम कानूनों को सरल बनाना, उद्योगों के लिए व्यापार सुगमता बढ़ाना और श्रमिकों के लिए बेहतर सामाजिक सुरक्षा प्रदान करना है। हालांकि कई विद्वानों, श्रमिक संगठनों और नीति विश्लेषकों ने इन श्रम सुधारों के कुछ नकारात्मक पहलुओं और चुनौतियों की भी ओर संकेत किया है।

**4.1. श्रमिक अधिकारों के कमजोर होने की आशंका-** नई श्रम संहिताओं के संबंध में यह आलोचना की जाती है कि ये नियोजकों को अधिक लचीलापन प्रदान करती हैं, जिससे श्रमिकों की नौकरी सुरक्षा कमजोर हो सकती है। विशेष रूप से औद्योगिक संबंध संहिता, 2020 के तहत 300 से कम कर्मचारियों वाले उद्योगों को छंटनी या बंद करने के लिए सरकारी अनुमति की आवश्यकता नहीं है। इससे श्रमिकों की नौकरी स्थिरता पर नकारात्मक प्रभाव पड़ सकता है।

**4.2. हड़ताल और ट्रेड यूनियन गतिविधियों पर प्रतिबंध-** औद्योगिक संबंध संहिता के अंतर्गत हड़ताल के लिए पहले से अधिक कठोर नियम बनाए गए हैं, जैसे कि हड़ताल से पहले 14 दिन का नोटिस देना अनिवार्य है। इससे श्रमिक संगठनों के लिए सामूहिक सौदेबाजी (Collective Bargaining) करना कठिन हो सकता है और श्रमिकों की आवाज कमजोर पड़ सकती है।

**4.3. अस्थायी और अनुबंध आधारित रोजगार में वृद्धि-** नई श्रम संहिताओं में Fixed Term Employment और ठेका श्रमिकों को बढ़ावा देने से उद्योगों को अधिक लचीलापन मिलता है। हालांकि आलोचकों का मानना है कि इससे स्थायी रोजगार के अवसर कम हो सकते हैं और श्रमिकों की सामाजिक सुरक्षा कमजोर हो सकती है।

**4.4. न्यूनतम वेतन निर्धारण की अस्पष्टता-** वेतन संहिता, 2019 में राष्ट्रीय न्यूनतम वेतन (Floor Wage) की व्यवस्था की गई है, लेकिन आलोचकों का कहना है कि इसमें न्यूनतम वेतन निर्धारित करने की स्पष्ट पद्धति का अभाव है। इससे विभिन्न राज्यों में वेतन असमानता और श्रमिकों के जीवन स्तर पर प्रभाव पड़ सकता है।

**4.5. असंगठित क्षेत्र के श्रमिकों के लिए सीमित सामाजिक सुरक्षा-** भारत में लगभग 90% श्रमिक असंगठित क्षेत्र में कार्य करते हैं, लेकिन नई श्रम संहिताओं में उनके लिए सामाजिक सुरक्षा व्यवस्था अभी भी पर्याप्त रूप से स्पष्ट नहीं है। यद्यपि सामाजिक सुरक्षा संहिता, 2020 में गिग और प्लेटफॉर्म श्रमिकों को शामिल किया गया है, फिर भी स्वास्थ्य बीमा, अवकाश और अन्य कल्याणकारी लाभों की व्यवस्था पूरी तरह स्पष्ट नहीं है।

**4.6. कार्य के घंटों में संभावित वृद्धि-** कुछ प्रस्तावों के अनुसार कार्य का अधिकतम समय 12 घंटे तक किया जा सकता है (हालाँकि साप्ताहिक सीमा 48 घंटे ही रहेगी)। इससे श्रमिकों पर कार्यभार बढ़ने और उनके स्वास्थ्य पर नकारात्मक प्रभाव पड़ने की संभावना व्यक्त की गई है।

**4.7. न्यायिक संरक्षण में कमी-** नई श्रम संहिताओं में कई मामलों में श्रमिकों को सीधे न्यायालय में जाने के बजाय प्रशासनिक या अर्ध-न्यायिक संस्थाओं के माध्यम से समाधान प्राप्त करना होगा। इससे न्याय प्राप्त करने की प्रक्रिया जटिल हो सकती है और श्रमिकों के अधिकारों की रक्षा कमजोर पड़ सकती है।

**4.8. असंगठित और छोटे उद्योगों का सीमित कवरेज-** आलोचकों का कहना है कि श्रम संहिताओं का दायरा अभी भी छोटे और सूक्ष्म उद्योगों तक पूर्ण रूप से नहीं पहुँचता। कई प्रावधान केवल बड़े प्रतिष्ठानों पर लागू होते हैं, जिससे असंगठित क्षेत्र के श्रमिकों का बड़ा हिस्सा कानूनी सुरक्षा से बाहर रह सकता है।

## 5. निष्कर्ष और सिफारिशें

### 5.1. निष्कर्ष

अध्ययन से स्पष्ट होता है कि नई श्रम संहिताएँ सकारात्मक प्रगति और चिंताओं- दोनों का मिश्रण हैं। एक ओर, ये कानूनों को सरल बनाती हैं और असंगठित, गिग श्रमिकों तथा खतरनाक कार्यों में लगी महिलाओं को सामाजिक सुरक्षा प्रदान करती हैं। दूसरी ओर, यूनियन प्रतिनिधित्व और हड़ताल से संबंधित प्रतिबंध श्रमिक अधिकारों को कमजोर कर सकते हैं। स्व-प्रमाणीकरण व्यवस्था भी सुरक्षा प्रावधानों के प्रभावी पालन पर प्रश्न उठाती है।

### 5.2. श्रम संहिताओं को बेहतर बनाने के लिए सुझाव

श्रमिक सुरक्षा को मजबूत करना: हड़ताल और यूनियन प्रतिनिधित्व से जुड़े प्रावधानों की पुनः समीक्षा की जाए।

प्रवर्तन तंत्र को सुदृढ़ करना: स्व-प्रमाणीकरण के साथ श्रम निरीक्षकों द्वारा यादृच्छिक ऑडिट भी किए जाएँ।

समावेशी संवाद: सरकार, नियोक्ताओं और ट्रेड यूनियनों के बीच अधिक संवाद स्थापित किया जाए।

असंगठित क्षेत्र पर ध्यान: जागरूकता अभियान और कल्याण बोर्डों को मजबूत किया जाए।

लैंगिक संवेदनशील नीतियाँ: महिला कर्मचारियों के लिए समान वेतन, सुरक्षा और मातृत्व/बाल देखभाल लाभ सुनिश्चित किए जाएँ।

### 5.3. भारत में श्रम सुधारों का भविष्य

नई श्रम संहिताएँ भारत की श्रम नीति में एक महत्वपूर्ण परिवर्तन का संकेत देती हैं, परंतु उनका वास्तविक प्रभाव प्रभावी क्रियान्वयन और बदलती चुनौतियों के प्रति सरकारी प्रतिक्रिया पर निर्भर करेगा। यदि इन्हें सही ढंग से लागू किया जाए, तो ये कानून अनौपचारिक श्रमिकों को औपचारिक सुरक्षा प्रदान करते हुए व्यवसायों के लिए नियामक बोझ कम कर सकते हैं। फिर भी, श्रमिक अधिकारों और नियोक्ता लचीलेपन के बीच संतुलन बनाए रखना आवश्यक है। गिग अर्थव्यवस्था, डिजिटल कार्यस्थलों और बदलते रोजगार संबंधों के कारण भविष्य में और सुधारों की आवश्यकता पड़ सकती है। अंततः, नई श्रम संहिताएँ सही दिशा में एक कदम हैं, लेकिन उनकी सफलता इस बात पर निर्भर करेगी कि उन्हें कैसे लागू, प्रवर्तित और समायुक्त संशोधित किया जाता है, ताकि भारत के श्रम बाजार में न्याय और संतुलन बना रहे।

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# विकसित भारत के निर्माण में स्टार्टअप की भूमिका

## The role of Startups in building a developed India

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### सारांश ( Abstract )

विकसित भारत के निर्माण में स्टार्टअप की भूमिका अत्यन्त महत्वपूर्ण है। रोजगार सृजन, तकनीकी नवाचार, आर्थिक और समावेशी विकास को नई दिशा देने में स्टार्टअप की महत्वपूर्ण भूमिका है। विकसित भारत @2047 के स्वप्न को साकार कर वैश्विक आर्थिक शक्ति बनाने के स्टार्टअप शक्तिशाली और अभिन्न स्तंभ हैं। रोजगार प्रदान करने, सकल घरेलू उत्पाद (GDP) को बढ़ाने, तकनीकी और डिजिटल बदलाव को बढ़ावा देने, शहरी और ग्रामीण खाई को पाटने, समावेशी और संतुलित विकास को बढ़ाने, नवाचार और आत्मनिर्भरता को बढ़ाने और भारत की वैश्विक पहचान बनाने में स्टार्टअप महत्वपूर्ण भूमिका निभा रहे हैं। पिछले एक दशक में स्टार्टअप के क्षेत्र में हुई अभूतपूर्व प्रगति ने भारत को आर्थिक एवं रक्षा उत्पादन क्षेत्र में आत्मनिर्भरता की ओर अग्रसर किया है। भारत में फिनटेक, अंतरिक्ष, रक्षा, कृत्रिम बुद्धिमत्ता, स्वास्थ्य, शिक्षा, ई-कॉमर्स, एग्रीटेक और डीप टेक जैसे विभिन्न क्षेत्रों में स्टार्टअप फैले हुए हैं। स्टार्टअप की नवाचार उद्यमिता, निवेश और आर्थिक विकास को बढ़ावा देने में महत्वपूर्ण भूमिका है। देश में यूनिवर्स स्टार्टअप की संख्या 120 तक पहुंच गयी है। भारत में स्टार्टअप के क्षेत्र में बुनियादी ढांचा, डीप-टेक नवाचारों की कमी, विभाजित मांग संरचना का होना, विदेशी पूंजी और वित्तीय अस्थिरताएं, फंडिंग की कमी, निम्न अनुसंधान जैसी चुनौतियां विद्यमान हैं। स्टार्टअप को तेजी से आगे बढ़ाने के लिए घरेलू स्तर पर पूंजीगत जोखिमों को कम करना, उद्योग-शैक्षणिक जुड़ाव को बढ़ावा देना, फंडिंग को बढ़ावा देना, डीप-टेक को आगे बढ़ाना, टियर II और III के शहरो में स्टार्टअप को बढ़ावा देना, नियामकीय सुधार, हरित और सतत् नवाचार को प्रोत्साहित करना शामिल है। भारत को ज्ञान आधारित अर्थव्यवस्था में परिवर्तित करने में स्टार्टअप प्रमुख स्तम्भ हैं जिनकी विकसित भारत @2047 के निर्माण का मार्ग प्रशस्त करने में अहम भूमिका रहेगी।

कुंजीभूत शब्द: विकसित भारत, स्टार्टअप, तकनीकी नवाचार, ज्ञान आधारित अर्थव्यवस्था, बुनियादी ढांचा, समावेशी विकास इत्यादि।

**परिचय (Introduction)**-वर्तमान में भारत विश्व का तीसरा सबसे बड़ा स्टार्टअप परिवेश है। देश में अब 2.09 लाख पंजीकृत स्टार्टअप हो गए हैं। वर्ष 2025 में देश में 50 हजार से ज्यादा नए स्टार्टअप शुरू हुए। प्रतिदिन देश में 136 नए स्टार्टअप खुले। आज देश में

मझोले व छोटे शहरों के साथ-साथ ग्रामीण क्षेत्रों के युवा बड़ी संख्या में स्टार्टअप स्थापित कर रहे हैं। स्टार्टअप नवाचार एवं विकास को तेजी से आगे बढ़ा रहे हैं। पिछले एक दशक में स्टार्टअप ने देशभर में करीब 21 लाख नौकरियां पैदा की। प्रत्येक स्टार्टअप ने औसतन 10 लोगों को सीधे काम दिया। स्टार्टअप में 45 फीसदी महिलाएं निदेशक या भागीदार हैं। महिला नेतृत्व वाले फंडिंग में भारत दुनिया का दूसरा सबसे बड़ा तन्त्र बन गया है।<sup>1</sup> स्टार्टअप इंडिया क्रान्ति के जरिये भारत अगले दशक में ट्रेड्स और प्रौद्योगिकी में दुनिया का नेतृत्व करेगा। 16 जनवरी, 2026 को स्टार्टअप इंडिया पहल के 10 वर्ष अर्थात् एक दशक पूर्ण हो गया है। स्टार्टअपस भारत के आर्थिक रूपान्तरण, नवाचार क्षमता और समावेशी क्षेत्रीय विकास के जरिये विकसित भारत @2047 के संकल्प को साकार करने में महत्वपूर्ण भूमिका निभा रहा है। बड़े महानगरों जैसे मुम्बई, दिल्ली-एनसीआर, बेंगलुरु और हैदराबाद अभी भी स्टार्टअप के क्षेत्र में अग्रणी हैं परन्तु लगभग 50 प्रतिशत स्टार्टअप टियर 2 और टियर 3 शहरों में उभर रहे हैं। वर्तमान समय में भारत में आई.टी. सेवाएं, स्वास्थ्य, विज्ञान, शिक्षा, कृषि, रक्षा और निर्माण जैसे क्षेत्रों में सबसे अधिक स्टार्टअप हैं। भारत के स्टार्टअप एयरोनॉटिक्स, एयरोस्पेस, रक्षा, रोबोटिक्स, हरित तकनीक, इंटरनेट, ऑफ थिंग्स और सेमीकंडक्टर जैसे क्षेत्रों में भी नवाचार कर रहे हैं।<sup>2</sup>

स्टार्टअप के जरिये नवाचार और मजबूत पारिस्थितिकी तंत्र को बढ़ावा देकर नये रोजगार सृजन करना शामिल है। भारत अपने विकसित भारत 2047 के लक्ष्य प्राप्ति की और तेजी के साथ बढ़ रहा है। अगले दो दशकों में स्टार्टअप की भूमिका राष्ट्र निर्माण में इस बात पर निर्भर रहेगी कि जलवायु, ऊर्जा, विनिर्माण, कृषि, प्रौद्योगिकी और वित्तीय समावेशन जैसे क्षेत्रों की वास्तविक समस्याओं के समाधान के साथ स्थिरता और दक्षता को कितना बढ़ावा दिया जाता है। वैश्विक स्तर पर अवसरों का लाभ उठाने के लिए भारत को बुनियादी ढांचे और पूंजी के साथ-साथ कुशल कार्यबल की आवश्यकता होगी, जो वैश्विक स्तर पर प्रतिस्पर्धा कर सके। प्रौद्योगिकी और स्टार्टअप एक-दूसरे के पूरक हैं। स्टार्टअप के क्षेत्र में शासन की अक्षमताओं, भ्रष्टाचार, ऋण तक पहुंच, स्वास्थ्य सेवा और शिक्षा जैसी समस्याओं का समाधान आवश्यक है। भारत के प्रत्येक क्षेत्र तक स्टार्टअप की पहुंच समावेशी राष्ट्र निर्माण का मार्ग प्रशस्त करेगी। भारत के भावी स्थायी स्टार्टअप का मूल्यांकन इनकी विकास गति के आधार पर नहीं बल्कि उनके आदर्शों, सेवा और जिम्मेदारीपूर्ण क्षमता से तय होगा। स्टार्टअप संगठनों के लिए नवचारों को ईमानदारी, व्यापकता को समावेशिता और महत्वाकांक्षा को जवाबदेही के साथ अपनाकर विकसित भारत 2047 के निर्माण को साकार करना होगा। भारत में स्टार्टअप की मजबूती से निजी क्षेत्रों में तेजी के साथ नौकरियों का सर्जन होने से बेरोजगारी की समस्या के समाधान में मदद मिलेगी। आर्टिफिशियल इंटेलिजेंस और डीपटेक के प्रति भारतीय स्टार्टअप का रुझान बढ़ेगा। छोटे शहरों में स्टार्टअप के बढ़ने से लोकतन्त्रीकरण में समावेशी विकास के लक्ष्य प्राप्ति को बढ़ावा मिलेगा। भविष्य में फिनटेक, क्लिक कॉमर्स और एटरप्राइज टेक के क्षेत्रों में स्टार्टअप तेजी से आगे बढ़ेंगे। महिला उद्यमिता और सतत् विकास से संबंधित स्टार्टअप के क्षेत्रों में अपार संभावनाएं हैं। भारत को एक विकसित राष्ट्र (2047) बनाने में स्टार्टअप समावेशी विकास और तकनीकी आत्मनिर्भरता के माध्यम से महत्वपूर्ण भूमिका निभायेंगे।

अनुसंधान क्रिया विधि- यह शोध 'विकसित भारत के निर्माण में स्टार्टअप की भूमिका' विश्लेषण का उपयोग कर गुणात्मक दृष्टिकोण को नियोजित करने पर केन्द्रित है। इस अध्ययन के माध्यम से विकसित भारत @2047 के निर्माण में स्टार्टअप की भूमिका की आवश्यकता एवं महत्व का पता लगाना शामिल है। शोध पत्र के माध्यम से अगले दो दशक में स्टार्टअप से सम्बन्धित समस्याओं व चुनौतियों के मद्देनजर आवश्यक सुझाव प्रस्तुत करना शामिल है। इस शोध हेतु अकादमिक लेखों, जनरल रिपोर्ट, पत्र-पत्रिकाओं, सरकारी पहलों, नीतिगत दस्तावेजों और सम्बन्धित पुस्तकों का अध्ययन किया गया है। शोध में प्रमुखतया द्वितीयक स्रोत का उपयोग किया गया है।

शोध के उद्देश्य- प्रस्तुत शोध पत्र 'विकसित भारत के निर्माण में स्टार्टअप की भूमिका' के उद्देश्य निम्नलिखित है-

1. विकसित भारत 2047 के निर्माण में स्टार्टअप की भूमिका के महत्व का आकलन करना।
2. स्टार्टअप के क्षेत्र में भारत में पिछले एक दशक में हुई प्रगति का मूल्यांकन करना।
3. स्टार्टअप के विविध क्षेत्रों से सम्बन्धित घरेलू और वैश्विक स्तर की चुनौतियों का पता लगाना।
4. वर्तमान में स्टार्टअप के क्षेत्रों में मौजूद चुनौतियों के समाधान हेतु सुझाव प्रस्तुत करना।
5. विकसित भारत @2047 और स्टार्टअप के बीच अर्न्तसम्बन्धों के महत्व को समझना।

### साहित्य समीक्षा-

प्रो. डॉ. सिंह कमल (2025)- 'भारत के आर्थिक विकास में स्टार्टअप की भूमिका: चुनौतियाँ और समाधान' नामक इस शोध पत्र में भारत में स्टार्टअप से सम्बन्धित चुनौतियाँ बढ़ती जनसंख्या, बेरोजगारी पर प्रकाश डाला गया है। साथ ही इस शोध पत्र में ग्रामीण क्षेत्रों में कृषि एवं खाद्य प्रसंकरण के क्षेत्रों में बढ़ते स्टार्टअप के साथ, महिलाओं के नेतृत्व में बढ़ती भारत की आत्मनिर्भरता का विश्लेषण किया गया है।

डॉ. सिंह विमलेश (2025)- 'विकसित भारत @2047 के लक्ष्य प्राप्ति में एक प्रगतिशील एवं समावेशी शिक्षा प्रणाली की अनिवार्यता' विषय पर आधारित इस शोध पत्र में आर्थिक वृद्धि, सामाजिक प्रगति, पर्यावरण स्थिरता और सुशासन के पहलुओं पर अध्ययन केन्द्रित किया गया है। विकसित भारत 2047 के लिए गुणवत्तापूर्ण शिक्षा और अनुसंधान के महत्व को उजागर किया है।

डॉ. गुप्ता शिल्पा (2023)- 'भारतीय अर्थव्यवस्था पर स्टार्टअप का प्रभाव' विषय पर आधारित इस शोध पत्र के जरिये नवाचार, रोजगार सर्जन, आर्टिफिशियल इंटेलिजेंस, रोबोटिक्स,

आर्थिक समृद्धि के जरिये स्टार्टअप के अर्थव्यवस्था पर पड़ने वाले प्रभाव का विश्लेषण किया गया है।

शुक्ल डॉ. अरविन्द कुमार (2023)- 'आत्मनिर्भर भारत की चुनौतियाँ और मुद्दे' नामक इस शोध पत्र में आत्मनिर्भर भारत की चुनौतियों, आर्थिक सुधारों, औद्योगीकरण, कृषि, प्रौद्योगिकी, बुनियादी ढांचा और वैश्विक व्यापार पहलुओं का अध्ययन किया है। भारत को आत्मनिर्भर बनाने हेतु आवश्यक रणनीतियाँ और नीतिगत सुधारों पर शोध केन्द्रित है।

विकसित भारत @2047 के निर्माण में स्टार्टअप की भूमिका की आवश्यकता एवं महत्व- विकसित भारत @2047 के निर्माण में स्टार्टअप उत्प्रेरक के माध्यम से देश की प्रगति को बढ़ावा दे रहे हैं। तकनीकी नवाचार, रोजगार सृजन और ग्रामीण विकास को बढ़ावा देकर आत्मनिर्भर भारत की नींव रखने का कार्य कर रहे हैं।

1. नवाचार और तकनीकी आत्मनिर्भरता के लिए- स्टार्टअप भारत में निरन्तर नवाचार और तकनीकी आत्मनिर्भरता को बढ़ावा देकर 'वोकल फॉर लोकल' से 'लोकर फॉर ग्लोबल' की दिशा में देश को आगे बढ़ा रहे हैं। पिछले एक दशक में रक्षा, कृषि, प्रौद्योगिकी, स्वास्थ्य और फिनटेक जैसे क्षेत्रों में हुई प्रगति के कारण आयात निर्भरता को कम करने में सहायक सिद्ध हो रहे हैं। दीक्षा पोर्टल, स्वयं और ई-पाठशाला जैसी पहलों ने गुणवत्तापूर्ण शिक्षा को हर वर्ग तक पहुँचाया है। अमूल, अरक, कॉफी और लिज्जत पापड़ जैसे मॉडलों ने सामुदायिक नवाचार और महिलाओं की उद्यमिता का उदाहरण पेश किया है। स्टार्टअप इण्डिया ने युवाओं को नवाचार और उद्यमिता की दिशा में प्रेरित किया है।<sup>1</sup>

2. समावेशी और क्षेत्रीय विकास के लिए- भारत में स्टार्टअप ने अपना एक दशक का सफर पूर्ण कर लिया है। वर्तमान में 50 प्रतिशत से अधिक स्टार्टअप टियर-II और टियर-III शहरों में उभर रहे हैं। उद्यमिता का तेजी के साथ लोकतन्त्रीकरण हो रहा है। ग्रामीण क्षेत्रों में रोजगार के अवसर पैदा हो रहे हैं जिससे शहरों की ओर पलायन में कमी आयी है। टियर-II शहरों में एआई, मशिन लर्निंग और साइबर सिक्युरिटी जैसे एडवांस स्किल्स की मांग सप्लाई से ज्यादा है। डेटा इंजीनियरिंग और डेवलपमेंट और ऑपरेशंस प्रोफेशनल्स की भारी कमी बनी हुई है। अब बैंकिंग, टेलिकॉम और एनर्जी सेक्टर में भी छोटे शहरों में भी बड़े शहरों जैसी तरक्की मिल रही है।<sup>2</sup> मुद्रा योजना और स्टैण्ड-अप इंडिया जैसी योजनाओं ने महिला उद्यमियों को ऋण सुविधा, व्यवसाय विस्तार और स्थानीय नेतृत्व के अवसर प्रदान किये हैं। महिला कार्यबल अब एक मजबूत आर्थिक स्तम्भ बन चुका है, जो न केवल विकास को गति देता है बल्कि नीति निर्माण, सामाजिक सशक्तिकरण और वैश्विक प्रतिस्पर्धा को भी मजबूती प्रदान करता है।<sup>3</sup> विकसित भारत का निर्माण समावेशी और क्षेत्रीय विकास के आधार पर ही हो सकता है। इस लक्ष्य की प्राप्ति में स्टार्टअप की अहम भूमिका होगी।

3. रोजगार सर्जन के लिए- भारत में स्टार्टअप ने लाखों प्रत्यक्ष और अप्रत्यक्ष रूप से नौकरियाँ पैदा की हैं। विकसित भारत के निर्माण के लिए जनसांख्यिकीय लाभांश का उपयोग

बेहद आवश्यक हैं। स्टार्टअप्स ने एक दशक में करीब 21 लाख नौकरियां दी हैं। एक स्टार्टअप्स ने औसतन 10 लोगों को सीधे काम दिया है।<sup>6</sup> भारत में वर्ष 2024-25 में खादी का कारोबार 1.70 लाख करोड़ रूपये तक पहुँच गया। भारत में खादी उद्योग वर्ष 2024-25 में 1.94 करोड़ लोगों को रोजगार प्रदान कर रहा है। खादी के मूल स्वदेशी सिद्धान्तों को 'मेक इन इंडिया' और 'स्किल इंडिया' जैसी आधुनिक पहलों से प्रासंगिकता और मजबूती दोनों मिली हैं।<sup>7</sup> स्टार्टअप्स के विविध क्षेत्रों में रोजगार सर्जन की अपार संभावनाएं मौजूद हैं।

4. समस्या आधारित समाधान में सहायक- भारत में स्टार्टअप्स वर्तमान में मूल्यांकन के बजाय वास्तविक समस्याओं जैसे जलवायु परिवर्तन और ऊर्जा के समाधान पर ज्यादा ध्यान केन्द्रित कर रहे हैं। स्टार्टअप्स की पर्यावरण प्रबंधन में कारगर भूमिका होगी। विकसित भारत का निर्माण प्रगति और प्रकृति को साथ लेकर ही हो सकता है। स्टार्टअप्स अपशिष्ट प्रबंधन, नवीकरणीय ऊर्जा, वायु गुणवत्ता सुधार, जल संरक्षण और टिकाऊ सामग्रियों के विकास को बढ़ावा देने में सहायक है।

5. डिजिटल अर्थव्यवस्था को मजबूती देने में सहायक- भारत में पिछले एक दशक में डिजिटलीकरण तेजी से बढ़ा है। स्टार्टअप्स के जरिये डिजिटल सार्वजनिक बुनियादी ढांचे का लाभ उठाकर समावेशी वित्तीय समाधान निकाला जा रहा है। स्टार्टअप्स में भारत की उद्यमशीलता के दोहन की पर्याप्त क्षमताएं हैं। स्टार्टअप्स के माध्यम से भारत की अर्थव्यवस्था को ज्ञान आधारित अर्थव्यवस्था में बदला जा सकता है। स्टार्टअप्स नवाचार, तकनीक और नये समाधानों के जरिये डिजिटल अर्थव्यवस्था को मजबूती प्रदान करते हैं।

विकसित भारत के निर्माण में स्टार्टअप्स की भूमिका से सम्बन्धित चुनौतियां- विकसित भारत के निर्माण में स्टार्टअप्स की भूमिका बेहद महत्वपूर्ण है। स्टार्टअप्स के क्षेत्र में निम्नलिखित चुनौतियां विकसित भारत के निर्माण के मार्ग की बड़ी बाधाएं वर्तमान में दिखाई पड़ रही हैं-

1. वित्तपोषण सम्बन्धित बाधाएं- वर्तमान में सरकारी योजनाओं के बावजूद स्टार्टअप्स को शुरूआती और निरन्तर वित्तपोषण को लेकर संघर्ष करना पड़ता है।

2. नियामक और कानूनी जटिलताएं- भारत में नियामक और कानूनी क्षेत्रों में काफी सुधार हुआ है किन्तु अभी भी जटिल कर संरचनाएं, श्रम कानून और नौकरशाही के कारण काफी समय और संसाधन व्यर्थ हो जाता है।

3. प्रतिभा की कमी का होना- वर्तमान में भारत में आर्टिफिशियल इंटेलिजेंस, मशीन लर्निंग और साइबर सुरक्षा जैसे क्षेत्रों में कुशल प्रतिभाओं की कमी है। इन क्षेत्रों में आवश्यकताओं के अनुरूप योग्य प्रतिभाओं की कमी एक बड़ी चुनौती है। कुछल कामगारों, इंजीनियरों और प्रबन्धकों की कमी देश के आर्थिक विकास में बाधक बन सकती है।

4. बुनियादी ढांचे का अभाव- भारत में स्टार्टअप्स के विस्तार के लिए टियर-II और टियर-III शहरों में मजबूत बुनियादी ढांचे, मार्गदर्शन और नेटवर्किंग की कमी सम्बन्धी बड़ी बाधाएं हैं।

5. उच्च विफलता दर का होना- भारत में स्टार्टअप्स के क्षेत्र में उत्पाद बाजार में तालमेल की कमी और खराब वित्तीय नियोजन के कारण ज्यादातर स्टार्टअप्स बन्द हो जाते हैं।

6. सीमित डीपटेक और अनुसंधान एवं विकास- मुख्यतया स्टार्टअप्स सेवा-आधारित मॉडल पर आधारित हैं। डीपटेक और पेटेंट आधारित अनुसंधान के क्षेत्रों में प्रगति अभी भी कम है। इनका सम्बन्ध कृत्रिम बुद्धिमत्ता, रोबोटिक्स, बायोटेक और क्वांटम कंप्यूटिंग जैसी उच्च तकनीक पर ध्यान केंद्रित करने से है। देश अपनी 90 प्रतिशत से अधिक सेमीकंडक्टर आवश्यकताओं के लिए आयात पर अत्यधिक निर्भर है।

विकसित भारत के निर्माण में स्टार्टअप्स की भूमिका से सम्बन्धित सुझाव- विकसित भारत के निर्माण में स्टार्टअप्स नवाचार, रोजगार सर्जन और तकनीकी प्रगति के जरिये महत्त्वपूर्ण योगदान दे रहे हैं। वर्तमान में भारत विश्व का तीसरा बड़ा स्टार्टअप्स इकोसिस्टम है जिसमें वर्ष 2029-30 तक 5 करोड़ नौकरियां और 01 ट्रिलियन डॉलर का योगदान देने की क्षमता निहित है।

डीपटेक और आर्टिफिशियल इंटेलिजेंस में निवेश बढ़ाना- भारत में 'इंडिया एआई मिशन' जैसी पहलों के जरिये कृत्रिम बुद्धिमत्ता, सेमीकंडक्टर, क्वांटम कंप्यूटिंग और बायोटेक जैसे उच्च जोखिम वाले क्षेत्रों में स्टार्टअप्स हेतु दीर्घकालिक वित्तपोषण की प्रभावी व्यवस्था की जानी चाहिए।

ग्रामीण-शहरी खाई को पाटना- विकसित भारत के निर्माण हेतु सभी क्षेत्रों तथा वर्गों का समावेशी विकास बेहद जरूरी है। इसलिए भारत के टियर-II और टियर-III शहरों का इनक्यूबेटर और डिजिटल इंफ्रास्ट्रक्चर मजबूत बनाना आवश्यक है क्योंकि 50 प्रतिशत स्टार्टअप्स अब मेट्रो शहर से बाहर हैं।

विनियामकीय ढांचे का सरलीकरण- स्टार्टअप्स को आसान बनाने के लिए 'सिंगल विंडो क्लीयरेंस' और स्व-प्रमाणीकरण का विस्तार करना जरूरी है।

महिला उद्यमिता को बढ़ावा देना- भारत में स्टार्टअप्स के क्षेत्र में 45 प्रतिशत से ज्यादा महिला भागीदारी हैं। महिला उद्यमिता को और ज्यादा बढ़ावा देने के लिए विशेष वित्तीय सहायता योजनाएं शुरू करना लाभदायक रहेगा।

अनुसंधान और शैक्षणिक जुड़ाव- भारत में स्टार्टअप्स को बढ़ावा देने के लिए आई.आई.टी. डीआरडीओ (DRDO) और इसरो (ISRO) जैसे संस्थानों के साथ मिलकर व्यावहारिक अनुसंधान एवं विकास आधारित फंडिंग (जैसे-India-AI) मिशन को बढ़ावा दिया जाना चाहिए।

बौद्धिक सम्पदा का सुदृढ़ीकरण- स्टार्टअप्स के क्षेत्र में पेटेंट फाइलिंग और अनुमोदन प्रक्रिया को तेज व सरल बनाकर इनोवेशन को सुरक्षित बनाया जाना चाहिए।

वैश्विक मंच पर पहचान दिलाना- भारतीय स्टार्टअप्स को अन्तराष्ट्रीय बाजार और निवेशकों से जोड़ने के लिए 'ग्लोबल मार्केट एक्सेस' को बढ़ावा दिया जाना चाहिए।

हरित और सतत् नवाचार को बढ़ावा देना- भारत में सतत् विकास को बढ़ावा देने वाले स्टार्टअप्स को बढ़ावा दिया जाना चाहिए। इलैक्ट्रिक मोबेलिटी, क्लीन एनर्जी और जलवायु प्रौद्योगिकियों पर आधारित स्टार्टअप्स को प्रोत्साहित किया जाना चाहिए। दुनिया जैसे-जैसे टिकाऊ फैशन की ओर बढ़ रही है, खादी भारत का नैतिक पर्यावरण-अनुकूल और संस्कृति निष्ठ उत्तर बनकर उभर रही है।

तकनीकी आत्मनिर्भरता जरूरी- डिजिटल युग में तकनीकी संप्रभुता अब राष्ट्रीय सुरक्षा का एक अभिन्न अंग बन गई है।<sup>10</sup> पारम्परिक युद्धों की जगह अब साइबर युद्धों ने ले ली है। भारत की डिजिटल और रणनीतिक स्वायत्तता बेहद आवश्यक है। विकसित भारत के निर्माण में तकनीकी संप्रभुता का महत्व अत्यधिक है।

**निष्कर्ष- ( Conclusion )-** भारत में स्टार्टअप्स के क्षेत्र में अपार संभावनाएं हैं। वर्तमान में रोजगार सर्जन, नवाचार और अनुसंधान एवं विकास के माध्यम से समावेशी आर्थिक विकास में स्टार्टअप्स महत्वपूर्ण योगदान कर रहा है। स्टार्टअप्स की गति को तेज करने के लिए विनियामकीय बाधाओं को दूर करना, शिक्षा एवं उद्योग के बीच सहयोग को बढ़ावा देना, वित्तपोषण एवं अवसरंचना तक सभी की समान पहुँच सुनिश्चित करना बेहद आवश्यक है। भारत शिक्षा, उद्यमिता एवं रोजगार को एकीकृत कर अपनी उद्यमशीलता क्षमता को साकार कर सकता है। स्टार्टअप्स भारत के 'विकसित भारत 2047' के विजन को गति देने वाले सबसे महत्वपूर्ण कारक है। स्टार्टअप्स केवल आर्थिक लाभ ही नहीं, बल्कि सामाजिक बदलाव भी ला रहे हैं। अटल इनोवेशन तथा स्टार्टअप इंडिया जैसी पहलों के माध्यम से नवोन्मषी उद्यम देश को वैश्विक शक्ति बनाने की राह पर तेजी से आगे बढ़ रहे हैं। विकसित भारत 2047 का निर्माण स्टार्टअप्स द्वारा जलवायु, कृषि और विनिर्माण क्षेत्रों की समस्याओं के समाधान पर निर्भर करेगा। विकसित भारत के लिए स्टार्टअप्स को प्रगति और प्रकृति दोनों को साथ लेकर आगे बढ़ना होगा।

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# विकसित भारत की दिशा में शिक्षकों की चुनौतियाँ और समाधान

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## सारांश :

भारत को 2047 तक एक विकसित राष्ट्र बनाने के लक्ष्य में शिक्षा की भूमिका केंद्रीय होगी, शिक्षा और शिक्षकों की ओर ध्यान दिए बिना विकसित भारत की कल्पना ही हास्यास्पद है। राष्ट्रीय शिक्षा नीति 2020 ने शिक्षा व्यवस्था में व्यापक परिवर्तन प्रस्तावित किए हैं। सूचना और प्रौद्योगिकी के अकल्पनीय विकास और कृत्रिम मेधा के अप्रत्याशित विकास के चलते शैक्षणिक ढांचे में आमूल-चूल बदलावों ने शिक्षकों के सामने चुनौतियों का बीहड़ खड़ा कर दिया है, इस शोध-पत्र में शिक्षकों के समक्ष अकादमिक, बौद्धिक, तकनीकी, नैतिक, प्रशासनिक और नियामक चुनौतियों का विश्लेषण करते हुए व्यावहारिक समाधान प्रस्तुत किए गए हैं।

## अस्वीकरण ( Disclaimer )

इस शोध-आलेख में व्यक्त विचार, विश्लेषण एवं निष्कर्ष लेखक के निजी अध्ययन और उपलब्ध अकादमिक व डिजिटल स्रोतों से ली गई सामग्री पर आधारित हैं। ये विचार अनिवार्य रूप से किसी व्यक्ति के मौलिक विचारों, संस्था, विश्वविद्यालय या सरकारी संगठन की आधिकारिक नीतियों या दृष्टिकोण का प्रतिनिधित्व नहीं करते। लेख में प्रयुक्त जानकारी केवल शैक्षणिक एवं शोध उद्देश्य से प्रस्तुत की गई है। पाठकों और शोधार्थियों से अपेक्षा की जाती है कि वे इस आलेख का उपयोग अकादमिक संदर्भ के रूप में करते समय मूल स्रोतों का भी अवलोकन एवं सत्यापन करें।

बीज शब्द: विकसित भारत @2047, शिक्षक, NEP 2020, नैतिक मूल्य, AI, कृत्रिम मेधा, शिक्षा, चुनौतियाँ

## भूमिका ( Introduction )

भारत सरकार का लक्ष्य 2047 तक भारत को एक %विकसित राष्ट्र% बनाना है। इस लक्ष्य की प्राप्ति के लिए राष्ट्रीय शिक्षा नीति (NEP) 2020 ने एक व्यापक खाका तैयार किया है। इसके क्रियान्वयन में शिक्षकों की महती भूमिका होगी, शिक्षक केवल ज्ञान के प्रसारक नहीं, बल्कि राष्ट्र - निर्माता (Architects of the Nation) हैं। विकसित भारत के लिए हमें ऐसे नागरिकों की आवश्यकता है जो न केवल साक्षर हों, बल्कि नवाचारी (Innovative), नैतिक

और वैश्विक स्तर पर प्रतिस्पर्धी भी हों, अंतर्राष्ट्रीय मंचों पर भारत का प्रतिनिधित्व और नेतृत्व कर सके। शिक्षकों के समक्ष विद्यमान चुनौतियों के समाधान से ही लक्ष्यों की प्राप्ति संभव है।

### शिक्षकों की भूमिका और विकसित भारत का विजन

विकसित भारत के लिए शिक्षा प्रणाली में 'रटने' (Rote Learning) को संस्कृति को बदलकर 'आलोचनात्मक सोच' (Critical Thinking) को बढ़ावा देना होगा। इसमें शिक्षक की भूमिका एक 'सुविधाप्रदाता' (Facilitator) की तो है ही, इससे बढ़कर 'मेंटर' और नायक की भी है। लेकिन इस दिशा में भी शिक्षकों के समक्ष बहुत चुनौतियाँ हैं।

### प्रमुख चुनौतियाँ ( Key Challenges )

वर्तमान सूचना प्रौद्योगिकी और कृत्रिम बुद्धिमत्ता के युग में में शिक्षकों के समक्ष जटिल और बहुआयामी चुनौतियाँ हैं:

**डिजिटल डिवाइड ( Digital Divide ):** शहरी और ग्रामीण क्षेत्रों के बीच तकनीक तक पहुंच में गंभीर अंतर है। कई शिक्षकों के पास आधुनिक डिजिटल उपकरणों और हाई-स्पीड इंटरनेट का अभाव है।

**गैर-शैक्षणिक कार्यों का बोझ:** जनगणना, चुनाव ड्यूटी और विभिन्न सरकारी योजनाओं के डेटा प्रबंधन जैसे कार्यों के कारण शिक्षकों का मुख्य ध्यान शिक्षण कार्यों से हटा जाता है।

**व्यावसायिक प्रशिक्षण की कमी ( Lack of CPD ):** तकनीक और शिक्षण विधियाँ तेजी से बदल रही हैं, लेकिन कई शिक्षकों को 'सतत व्यावसायिक विकास' (Continuous Professional Development) के अवसर नहीं मिल पा रहे हैं।

**छात्र-शिक्षक अनुपात ( Pupil-Teacher Ratio ):** कई सरकारी स्कूलों में अभी भी छात्रों की संख्या के अनुपात में शिक्षकों की कमी है, जिससे व्यक्तिगत ध्यान देना कठिन हो जाता है। शिक्षण की गुणवत्ता प्रभावित होती है।

**भाषाई, सांस्कृतिक विविधता:** समावेशी शिक्षा के तहत विविध पृष्ठभूमि और भाषाओं वाले बच्चों को एक साथ एक ही पाठ्यक्रम के साथ जोड़ना, मुख्यधारा में शामिल करना एक बड़ी चुनौती है।

### राष्ट्रीय शिक्षा नीति ( NEP ) 2020 का प्रभाव

NEP 2020 केवल एक नीति नहीं, बल्कि भारतीय शिक्षा प्रणाली के कायाकल्प (Transformation) का सुनियोजित प्रयास है। इसका शिक्षकों पर सीधा प्रभाव निम्नलिखित रूपों में देखा जा सकता है:

#### 1. शिक्षण पद्धति में बदलाव ( Shift in Pedagogy )

5+3+3+4 संरचना: शिक्षकों को अब पारंपरिक %रटने% वाली पद्धति से हटकर %खेल-आधारित% और %खोज-आधारित% शिक्षा पर ध्यान केंद्रित करना पड़ रहा है, जो शिक्षकों को चुनौती प्रतीत हो रहा है।

**बहुविषयक दृष्टिकोण ( Multidisciplinary Approach ):** अब शिक्षक केवल अपने विषय/ किसी विषय विशेष तक सीमित नहीं हैं; उन्हें विभिन्न विषयों को आपस में जोड़कर जैसे गणित को संगीत के साथ पढ़ाना होगा यह चुनौती साबित हो रहा है।

## 2. मूल्यांकन प्रणाली में सुधार

रिपोर्ट कार्ड के स्थान पर ' 360-डिग्री समग्र प्रगति कार्ड' ने शिक्षकों की जिम्मेदारी बढ़ा दी है। अब शिक्षक को छात्र के संज्ञानात्मक, भावनात्मक और मनोवैज्ञानिक विकास का आकलन करना होता है। तदानुरूप कौशलों से युक्त होना शिक्षकों के लिए चुनौती है।

## डिजिटल शिक्षण की चुनौतियाँ ( Challenges in Digital Teaching )

डिजिटल क्रांति ने शिक्षा को सुलभ तो बनाया है, लेकिन शिक्षकों के लिए कई नई बाधाएँ भी उत्पन्न की हैं:

### 1. तकनीकी दक्षता का अभाव ( Lack of Technical Proficiency )

कई अनुभवी शिक्षक जो पारंपरिक ब्लैकबोर्ड पद्धति के विशेषज्ञ हैं, उन्हें यकायक रूस ( Learning Management Systems ), जूम, और गूगल क्लासरूम ,मीट,वाईब जैसे प्लेटफार्मों को अपनाने में कठिनाई हो रही है।

### 2. स्क्रीन फटीग और छात्र जुड़ाव ( Screen Fatigue and Engagement ) की समस्या

ऑनलाइन कक्षाओं में छात्रों का ध्यान केंद्रित रखना एक बड़ी चुनौती साबित हो रहा है। शिक्षकों के लिए छात्रों की शारीरिक उपस्थिति के बिना उनकी प्रतिक्रियाओं ( Body Language ) को समझना मुश्किल हो जाता है, जिससे शिक्षण का मानवीय पक्ष कमजोर पड़ता है।

### 3. 'ब्लेंडेड लर्निंग' का प्रबंधन

शिक्षकों को अब हाइब्रिड मॉडल ( ऑनलाइन + ऑफलाइन ) के लिए दोहरी तैयारी करनी पड़ती है। डिजिटल सामग्री ( e-content ) तैयार करना एक समय साध्य प्रक्रिया है जिसके लिए अतिरिक्त समय और कौशल की आवश्यकता होती है।

डिजिटल चुनौती	प्रस्तावित समाधान
कंटेंट की गुणवत्ता	दीक्षा ( DIKSHA ) और स्वयं ( SWAYAM ) जैसे पोर्टल्स का एकीकरण करना ।
इंटरनेट कनेक्टिविटी	पीएम ई-विद्या ( PM e-VIDYA ) के माध्यम से रेडियो और टीवी चैनलों के उपयोग को बढ़ावा देकर ।
साइबर सुरक्षा	शिक्षकों और छात्रों के लिए %डिजिटल एथिक्स% और साइबर सुरक्षा कार्यशालाएँ आयोजित करके ।

विकसित भारत के निर्माण के लिए NEP - 2020 एक 'उत्प्रेरक' (Catalyst) है, लेकिन इसकी सफलता इस बात पर निर्भर करती है कि हम अपने शिक्षकों को डिजिटल युग की चुनौतियों से लड़ने के लिए कितना सक्षम बनाते हैं। शिक्षा का डिजिटलीकरण अनिवार्य है, लेकिन डिजिटलीकरण शिक्षक की 'मानवीय संवेदना' और 'मार्गदर्शन' का कोई विकल्प नहीं हो सकता।

### प्रस्तावित समाधान ( Proposed Solutions )

इन चुनौतियों का सामना करने के लिए निम्नलिखित समाधान अपनाए जा सकते हैं:

श्रेणी	समाधान की रणनीति
तकनीकी सशक्तिकरण	शिक्षकों के लिए 'डिजिटल साक्षरता' अनिवार्य करना और स्कूलों में स्मार्ट क्लासरूम की स्थापना को बढ़ावा देना होगा।
प्रशासनिक सुधार	शिक्षकों को गैर-शैक्षणिक कार्यों से मुक्त करना ताकि वे केवल शिक्षण और शोध पर अपेक्षित ध्यान दे सकें।
प्रशिक्षण कार्यक्रम	NEP - 2020 के अनुसार प्रति वर्ष न्यूनतम 50 घंटे का सतत व्यावसायिक विकास (CPD) अनिवार्य है, उसे लागू करना।
मानसिक स्वास्थ्य	शिक्षकों के लिए तनाव प्रबंधन और परामर्श सत्र आयोजित करना।
नवाचार को प्रोत्साहन	'बेस्ट टीचर अवार्ड्स' के साथ-साथ नवाचारी शिक्षण विधियों के लिए शोध अनुदान (Grants) प्रदान करना भी समाधान हो सकता है।

विकसित भारत के निर्माण में केवल बौद्धिक विकास ही पर्याप्त नहीं है, बल्कि 'चरित्र निर्माण' सबसे महत्वपूर्ण है। वर्तमान युग में जहाँ सूचनाओं की तो बाढ़ आ गई है, वहाँ शिक्षकों के लिए छात्रों में नैतिक मूल्यों को आत्मसात करना सबसे कठिन कार्य बन गया है।

### नैतिक मूल्य और शिक्षकों के समक्ष चुनौतियाँ

विकसित भारत का अर्थ केवल आर्थिक रूप से संपन्न होना नहीं, बल्कि एक नैतिक समाज का निर्माण भी है। शिक्षक को यहाँ एक 'आदर्श' %रोल मॉडल% की भूमिका निभानी होती है।

#### 1. वर्तमान नैतिक चुनौतियाँ ( Ethical Challenges )

**डिजिटल नैतिकता (Digital Ethics):** सोशल मीडिया के इस युग में छात्र गलत सूचनाओं, साइबर बुलिंग और अश्लील सामग्री के संपर्क में आकर जल्दी प्रभावित हो जाते हैं। शिक्षकों के लिए यह चुनौती है कि वे छात्रों को 'डिजिटल नागरिकता' (Digital Citizenship) और इंटरनेट के जिम्मेदार उपयोग के बारे में समझाएं।

**उपभोक्तावादी संस्कृति (Consumerism):** समाज में बढ़ते भौतिकवाद के कारण छात्र

सफलता को केवल 'पैसे' और 'सुविधाओं' से मापने लगे हैं। करुणा, सहानुभूति, सेवा और संतोष जैसे मूल्यों को पुनर्सथापित करना शिक्षकों के लिए अत्यंत कठिन हो गया है।

शून्य अनुशासन और धैर्य की कमी: त्वरित परिणाम (Instant Gratification) की चाह में छात्रों में धैर्य कम होता जा रहा है। शिक्षकों के लिए कक्षा में अनुशासन बनाए रखना और छात्रों को संघर्ष की महत्ता समझाना एक चुनौती बन गया है।

परिवारिक संरचना में बदलाव: एकल परिवारों के बढ़ने और माता-पिता की अत्यधिक व्यस्तता के कारण बच्चों को मिलने वाला प्राथमिक नैतिक बोध कम हुआ है, जिससे स्कूल और शिक्षक पर इसके क्रियान्वयन का बोझ बढ़ गया है।

### समाधान: मूल्य-आधारित शिक्षा की रणनीतियाँ अपनाकर

शिक्षकों को इन चुनौतियों से निपटने के लिए निम्नलिखित कदम उठाने होंगे:

**अनुभवजन्य अधिगम (Experiential Learning):** नैतिक मूल्यों को केवल पुस्तकों से नहीं पढ़ाया जा सकता। इसके लिए छात्रों को सामुदायिक सेवा, वृद्धजनों के दौरे और पर्यावरण संरक्षण जैसे कार्यों से जोड़ना चाहिए।

**कथा वाचन और महापुरुषों के उदाहरण:** भारतीय ज्ञान परंपरा के माध्यम से पंचतंत्र, हितोपदेश की कहानियों, रामायण, महाभारत, गांधीवादी दर्शन और डॉ. कलाम जैसे व्यक्तित्वों के जीवन से 'सत्य' और 'निष्ठा' के पाठ पढ़ाना प्रभावशाली कदम हो सकता है।

**अप्रत्यक्ष शिक्षण (Implicit Teaching):** शिक्षक का अपना आचरण सबसे बड़ा पाठ है। यदि शिक्षक स्वयं समय के पाबंद और ईमानदार हैं, तो छात्र स्वाभाविक तौर पर उन मूल्यों को अपना लेते हैं।

**संवेगात्मक बुद्धिमत्ता (Emotional Intelligence):** शिक्षकों को छात्रों के 'IQ' (Intelligence Quotient) के साथ-साथ 'EQ' (Emotional Quotient) पर भी ध्यान देना चाहिए ताकि वे दूसरों के प्रति सानुभूती/सहानुभूति रख सकें।

विकसित भारत के लिए 5 अनिवार्य नैतिक मूल्य जो शिक्षकों द्वारा अपनाए जाने अपेक्षित हैं-

शिक्षकों को 2047 के भारत के लिए इन पाँच स्तंभों पर ध्यान केंद्रित करना होगा, शिक्षा द्वारा ही इन मूल्यों का समावेश किया जा सकता है, क्योंकि :

1. **सत्यनिष्ठा (Integrity):** भ्रष्टाचार मुक्त समाज के लिए आवश्यक ।
2. **समानता (Equality):** जाति, धर्म और लिंग के भेदभाव को मिटाने के लिए आवश्यक ।
3. **उत्तरदायित्व (Accountability):** अपने कर्तव्यों के प्रति सजग रहने के लिए आवश्यक ।

**4. सहिष्णुता ( Tolerance ):** विविधतापूर्ण भारत में शांति बनाए रखने के लिए आवश्यक।

**5. पर्यावरण के प्रति प्रेम ( Environmental Ethics ):** सतत विकास के लिए आवश्यक।

### विकसित भारत हेतु नैतिक मूल्य और शिक्षकों की भूमिका

शिक्षक केवल पाठ्यक्रम पूरा करने वाली मशीन नहीं है, बल्कि वह समाज का 'नैतिक दिशा-सूचक' (Moral Compass) है। विकसित भारत का सपना तभी पूरा होगा जब हम 'कौशल युक्त हाथ' के साथ-साथ 'करुणा युक्त हृदय' वाले नागरिक तैयार करेंगे। यह भी शिक्षकों का दायित्व है।

एक विकसित राष्ट्र केवल आर्थिक आंकड़ों से नहीं, बल्कि अपने नागरिकों के चरित्र से पहचाना जाता है। NEP 2020 भी 'सर्वैधानिक मूल्यों' और 'नैतिक बोध' पर विशेष बल देती है।

### 1. शिक्षकों के समक्ष नैतिक चुनौतियाँ ( Ethical Challenges )

वर्तमान वैश्विक और तकनीकी परिवेश में शिक्षकों के सामने निम्नलिखित नैतिक संकट उत्पन्न हो रहे हैं:

**डिजिटल भटकाव और नैतिकता:** सूचना के युग में छात्रों के पास सामग्री की कमी नहीं है, लेकिन 'सही और गलत' के बीच चुनाव करने की क्षमता का अभाव है। साइबर अपराध और सोशल मीडिया की आभासी दुनिया छात्रों को वास्तविक मानवीय संवेदनाओं से दूर कर रही है।

**मूल्यों का व्यावसायीकरण:** सफलता की अंधी दौड़ ने शिक्षा को केवल 'पैकेज' तक सीमित कर दिया है। शिक्षकों के लिए सबसे बड़ी चुनौती छात्रों को यह समझाना है कि 'सफलता से बड़ा चरित्र' है।

**सांस्कृतिक क्षरण:** पश्चिमीकरण और वैश्विक संस्कृति के प्रभाव में भारतीय जीवन मूल्यों (जैसे बड़ों का सम्मान, सहिष्णुता और कृतज्ञता) का ह्रास हो रहा है, जिसे पुनर्स्थापित करना शिक्षकों के लिए एक कठिन कार्य है।

विवेक युक्त शिक्षा की उपलब्धता को सुनिश्चित करवाना शिक्षकों का ही दायित्व है।

### प्रस्तावित समाधान: मूल्य-आधारित शिक्षण मॉडल

शिक्षकों को केवल 'सूचना प्रदाता' से ऊपर उठकर एक %नैतिक मार्गदर्शक% बनना होगा। इसके लिए निम्नलिखित मॉडल अपनाया जा सकता है:

**आदर्श आचरण ( Role Modeling ):** शिक्षक का अपना जीवन ही छात्रों के लिए सबसे बड़ी पाठ्यपुस्तक है। सत्यनिष्ठा, समयपालन और ईमानदारी जैसे गुणों का प्रदर्शन शिक्षक को स्वयं करना होगा।

कहानी और केस स्टडी पद्धति: शुष्क उपदेशों के बजाय महापुरुषों के जीवन प्रसंगों और वास्तविक जीवन की नैतिक दुविधाओं (Ethical Dilemmas) पर चर्चा करके छात्रों की निर्णय क्षमता को विकसित करना होगा।

**सामुदायिक जुड़ाव:** छात्रों को सामाजिक कार्यों, जैसे श्रमदान या निर्धन बच्चों की सहायता से जोड़ना, ताकि उनमें 'समानुभूति' (Empathy) का विकास हो सके।

**विकसित भारत @2047 के लिए अनिवार्य नैतिक मूल्य**

**शिक्षकों को इन पाँच मूल्यों को प्राथमिकता देनी होगी :**

1. **सत्यनिष्ठा ( Integrity ):** यह सुनिश्चित करना होगा कि छात्र व्यक्तिगत लाभ के ऊपर राष्ट्र हित और ईमानदारी को रखें।

2. **सहिष्णुता ( Tolerance ):** भारत की विविधता को स्वीकार करना और आपसी भाईचारे को बढ़ावा देना होगा।

3. **संवैधानिक उत्तरदायित्व:** अधिकारों के साथ-साथ कर्तव्यों के प्रति सजग नागरिक तैयार करने पर बल देना होगा।

4. **पर्यावरणीय नैतिकता ( Environmental Ethics ):** प्रकृति के प्रति सम्मान और सतत जीवन शैली को बढ़ावा देना होगा।

5. **करुणा ( Compassion ):** समाज के अंतिम व्यक्ति तक के प्रति संवेदनशीलता को बढ़ावा देना शिक्षा में शामिल करना होगा।

'विकसित भारत' का स्वप्न केवल स्मार्ट शहरों और बुलेट ट्रेनों से पूरा नहीं होगा। इसका आधार वे नागरिक होंगे जो तकनीक में आधुनिक लेकिन मूल्यों में प्राचीन( भारतीय) होंगे। शिक्षक इस परिवर्तन के सबसे बड़े उत्प्रेरक हैं, जो छात्रों के मस्तिष्क (Head), हृदय (Heart) और हाथ (Hand) का सामंजस्य बिठाकर एक श्रेष्ठ भारत का निर्माण कर सकते हैं। विकसित भारत का मार्ग क्लासरूम से होकर गुजरता है। यदि हम शिक्षकों को आधुनिक संसाधनों, उचित सम्मान और निरंतर सीखने के अवसर प्रदान करते हैं, तो वे भारत को वैश्विक 'ज्ञान महाशक्ति' (Knowledge Superpower) बनाने में सफल होंगे। चुनौतियों का समाधान केवल नीतिगत बदलावों से नहीं, बल्कि जमीनी स्तर पर शिक्षकों के सशक्तिकरण से संभव है।

कृत्रिम बुद्धिमत्ता के अत्यधिक प्रचार-प्रसार ने शिक्षकों के समक्ष कुछ नई चुनौतियाँ पेश की हैं :-

**कृत्रिम बुद्धिमत्ता ( AI ) और शिक्षकों के समक्ष चुनौतियाँ**

कृत्रिम बुद्धिमत्ता (AI) के युग में शिक्षक की भूमिका 'सूचना के स्रोत' से बदलकर 'मेंटोर' और 'गाइड' की हो गई है। इससे प्रभावित प्रमुख चुनौतियाँ और उनके प्रभाव दिए गए हैं:

### शैक्षणिक ईमानदारी ( Academic Integrity ) की चुनौती

**ChatGPT जैसे AI टूल्स:** छात्र होमवर्क, निबंध और शोध कार्यों के लिए AI (जैसे ChatGPT, Gemini) का उपयोग कर रहे हैं। इससे शिक्षकों के लिए यह पहचानना कठिन हो गया है कि कार्य छात्र का है या मशीन का। शोध नैतिकता एक बड़ी चुनौती है।

**आलोचनात्मक सोच का ह्रास:** यदि छात्र हर समस्या के समाधान के लिए AI पर निर्भर हो जाएंगे, तो उनकी स्वयं की सोचने और समस्या सुलझाने की क्षमता (Problem Solving Skills), रचनात्मकता कम हो सकती है।

**भय की स्थिति:** कई शिक्षकों में यह असुरक्षा है कि क्या AI भविष्य में उनकी जगह ले लेगा?

**तकनीकी अंतराल:** पुरानी पीढ़ी के शिक्षकों के लिए AI टूल्स को सीखना और उन्हें कक्षा में प्रभावी ढंग से लागू करना एक बड़ी मनोवैज्ञानिक और तकनीकी बाधा है।

### डेटा गोपनीयता और सुरक्षा ( Data Privacy )

AI एल्गोरिदम छात्रों के व्यवहार और प्रदर्शन का डेटा एकत्र करते हैं। शिक्षकों के सामने चुनौती यह है कि वे इस डेटा का उपयोग तो करें, लेकिन छात्र की गोपनीयता (Privacy) और सुरक्षा से समझौता न होने दें।

### AI से उत्पन्न चुनौतियों का समाधान ( Strategies to Overcome )

शिक्षक AI से मुकाबला करने के बजाय इसे अपना 'सहयोगी' बना सकते हैं:

**मूल्यांकन पद्धति में बदलाव:** अब केवल लिखित असाइनमेंट के बजाय 'इन-क्लास' कक्षा में) प्रस्तुति, मौखिक परीक्षा और क्रियात्मक (Practical) कार्यों पर अधिक जोर देना चाहिए जिन्हें AI आसानी से नहीं कर सकता।

**AI साक्षरता ( AI Literacy ): शिक्षकों को 'प्रॉम्प्ट इंजीनियरिंग' AI से सही उत्तर प्राप्त करने की कला और AI टूल्स का उपयोग करना सिखाया जाना चाहिए ताकि वे अपना प्रशासनिक बोझ (जैसे पेपर सेट करना या अटेंडेंस कम कर सकें)।**

**नैतिक AI उपयोग:** शिक्षकों को छात्रों को यह सिखाना होगा कि AI एक 'मददगार' है, 'विकल्प' नहीं। छात्रों को AI के नैतिक उपयोग और उसके दोषों (Biases) के बारे में शिक्षित करना अनिवार्य है।

AI का उपयोग	शिक्षक की भूमिका
पर्सनलाइज्ड लर्निंग	छात्र की प्रगति की निगरानी और भावनात्मक सहयोग देना।
कंटेंट जनरेशन	तैयार कंटेंट की सत्यता की जांच और संदर्भ (Content) जोड़ना।
ऑटोमेटेड ग्रेडिंग	परिणामों का विश्लेषण कर छात्र की कमजोरी दूर करना।

विकसित भारत @2047 के लिए हमें 'Human-AI Collaboration' (मानव-AI सहयोग) की आवश्यकता है। AI केवल 'क्या' और 'कैसे' का उत्तर दे सकता है, लेकिन 'क्यों' का उत्तर और मानवीय संवेदना केवल एक शिक्षक ही दे सकता है। शिक्षक को AI से डरने के बजाय उसे एक शक्तिशाली उपकरण के रूप में उपयोग कर शिक्षा को अधिक व्यक्तिगत और प्रभावी बनाना होगा।

विकसित भारत @2047 के स्वप्न को साकार करने के लिए शिक्षा के नियामक ढांचे (Regulatory Framework) में आमूल-चूल परिवर्तन की आवश्यकता है। वर्तमान में भारतीय शिक्षा प्रणाली NCTE, UGC, और AICTE जैसी विभिन्न संस्थाओं द्वारा विनियमित होती है, लेकिन NEP - 2020 के तहत इनमें बड़े नियामकीय सुधार प्रस्तावित हैं।

### नियामक संस्थाओं में सुधार और शिक्षकों पर प्रभाव से उत्पन्न चुनौतियाँ

शिक्षा क्षेत्र में 'नियमन' (Regulation) का उद्देश्य गुणवत्ता सुनिश्चित करना है, लेकिन अक्सर जटिल लालफीताशाही शिक्षकों के लिए बाधाएं बन जाती है। बदलावों को लागू करते समय शिक्षकों के पक्ष को भी सुना जाना चाहिए, सभी संस्थाओं में उनका उचित प्रतिनिधित्व सुनिश्चित किया जाए।

**प्रमुख नियामक सुधार ( Key Regulatory Reforms ) और शिक्षकों पर इन सुधारों के सकारात्मक प्रभाव**

- **HECI की स्थापना:** उच्च शिक्षा में बहु-स्तरीय विनियामक संरचना को समाप्त कर भारतीय उच्च शिक्षा परिषद (Higher Education Commission of India - HECI) की स्थापना का प्रस्ताव है। यह 'लाइट बट टाइट' (Light but Tight) नियमन पर आधारित होगा।

- **NHERC और NAC:** मानक निर्धारण और प्रत्यायन (Accreditation) के लिए अलग-अलग संस्थाओं का गठन किया जा रहा है ताकि पारदर्शिता और प्रभाव बढ़े।

- **NPST (National Professional Standards for Teachers):** शिक्षकों के लिए राष्ट्रीय पेशेवर मानक तैयार किए जा रहे हैं, जो उनकी पदोन्नति, वेतन वृद्धि और दक्षता का आधार बनेंगे।

**पारदर्शी करियर विकास ( CPPS ): 'करियर पाथवे प्रोग्रेशन' के माध्यम से शिक्षकों को उनकी योग्यता और प्रदर्शन के आधार पर पदोन्नति मिलेगी, न कि केवल वरिष्ठता (Seniority) के आधार पर।**

**मानकीकृत प्रशिक्षण:** नियामक संस्थाओं द्वारा संचालित निरंतर व्यावसायिक विकास (CPD) कार्यक्रमों से शिक्षकों को वैश्विक स्तर की शिक्षण विधियों को सीखने का अवसर मिलेगा।

**भ्रष्टाचार में कमी:** डिजिटल गवर्नेंस और एकल खिड़की (Single Window) प्रणाली

से शिक्षकों को प्रशासनिक कार्यों और एनओसी (NOC) जैसे कार्यों के लिए दपतरों के चक्र नहीं काटने पड़ेंगे।

### उत्पन्न चुनौतियाँ और शिक्षकों की चिंताएँ

नियामक सुधारों के साथ शिक्षकों के मन में कुछ शंकाएँ भी हैं:

नगरानी का दबाव: अत्यधिक 'जवाबदेही' (Accountability) और निरंतर मूल्यांकन से शिक्षकों में तनाव बढ़ सकता है। उन्हें लग सकता है कि उनकी स्वायत्तता (Autonomy) कम हो रही है।

संसाधनों का अभाव: नियामक संस्थाएँ ऊँचे मानक तो तय कर देती हैं, लेकिन ग्रामीण क्षेत्रों के शिक्षकों के पास उन मानकों को पूरा करने के लिए बुनियादी ढांचे (Infrastructure) की कमी होती है।

प्रशिक्षण का अंतराल: नई नियामक नीतियों को समझने और उनके अनुरूप खुद को ढालने के लिए समय और मार्गदर्शन की कमी है।

### समाधान और भविष्य की राह

**सहयोगात्मक नियमन:** नियामक संस्थाओं को %नियंत्रक% के बजाय 'परामर्शदाता' (Mentor) की भूमिका निभानी चाहिए।

**स्थानीय अनुकूलन:** नीतियाँ बनाते समय क्षेत्रीय और भौगोलिक विविधताओं को ध्यान में रखना चाहिए ताकि दूर-दराज के शिक्षक भी मानकों को पूरा कर सकें।

**शिक्षक सशक्तिकरण:** शिक्षकों को नीति निर्धारण की प्रक्रिया में शामिल करना चाहिए ताकि जमीनी स्तर की चुनौतियाँ नियामक ढांचे का हिस्सा बन सकें।

### उच्चतर शिक्षा और शिक्षकों के समक्ष चुनौतियाँ

उच्चतर शिक्षा किसी भी राष्ट्र की ज्ञान-आधारित अर्थव्यवस्था, नवाचार क्षमता और वैश्विक प्रतिस्पर्धा का आधार होती है। विश्वविद्यालय और महाविद्यालय न केवल मानव संसाधन का निर्माण करते हैं, बल्कि शोध, नवाचार और सामाजिक परिवर्तन के केंद्र भी होते हैं। इस व्यवस्था की गुणवत्ता काफी हद तक शिक्षकों की अकादमिक दक्षता, स्वायत्तता और कार्य-परिस्थितियों पर निर्भर करती है। वर्तमान समय में उच्चतर शिक्षा तीव्र संरचनात्मक, तकनीकी और वैचारिक परिवर्तनों से गुजर रही है, जिनका सीधा प्रभाव शिक्षकों की भूमिका और दायित्वों पर पड़ता है।

#### 1. अकादमिक विस्तार और गुणवत्ता का द्वंद्व

उच्चतर शिक्षा में नामांकन बढ़ा है, किंतु गुणवत्ता-सुनिश्चिती एक प्रमुख चुनौती बनी हुई है। शिक्षकों पर पाठ्यक्रम पूर्ण करने, परिणाम सुधारने और शोध-उत्पादन बढ़ाने का दबाव है, जिससे गहन शिक्षण और मार्गदर्शन प्रभावित होता है।

## 2. शोध बनाम शिक्षण का असंतुलन

शिक्षकों से उच्च स्तरीय शोध-प्रकाशन की अपेक्षा बढ़ी है, परंतु पर्याप्त शोध अवसररचना, अनुदान और समय उपलब्ध नहीं होता। इससे शिक्षण और शोध के बीच संतुलन बिगड़ता है तथा शिक्षण-गुणवत्ता पर प्रतिकूल प्रभाव पड़ता है। यह बढ़ी चुनौती है।

## 3. डिजिटल परिवर्तन और तकनीकी दबाव

ऑनलाइन/ब्लेंडेड लर्निंग, स्कू, ई-कॉन्टेंट और डेटा-आधारित मूल्यांकन ने शिक्षकों से नए डिजिटल कौशल की मांग बढ़ाई है। तकनीकी प्रशिक्षण की असमान उपलब्धता और डिजिटल थकान (Screen Fatigue) शिक्षकों के लिए चुनौती बनती जा रही है।

## 4. कृत्रिम बुद्धिमत्ता और अकादमिक ईमानदारी

AI टूल्स ने सामग्री निर्माण और मूल्यांकन को सरल बनाया है, किंतु अकादमिक ईमानदारी, मौलिकता और आलोचनात्मक सोच पर प्रश्न भी उठाए हैं। शिक्षकों के सामने यह चुनौती है कि वे AI को सहयोगी बनाते हुए नैतिक उपयोग सुनिश्चित करें।

## 5. नियामक ढांचे का दबाव

प्रत्यायन, रैंकिंग, सीखने के परिणाम (LOs) और निरंतर मूल्यांकन ने जवाबदेही बढ़ाई है। हालांकि, अत्यधिक प्रक्रियात्मकता से शिक्षकों की अकादमिक स्वायत्तता और नवाचार प्रभावित हो सकते हैं।

## 6. प्रशासनिक एवं गैर-शैक्षणिक दायित्व

उच्चतर शिक्षा संस्थानों में शिक्षकों को अनेक प्रशासनिक कार्य सौंपे जाते हैं, जिससे शिक्षण और शोध के लिए उपलब्ध समय घटता है। यह स्थिति कार्य-भार और तनाव को बढ़ाती है।

## 7. छात्र-विविधता और समावेशन

विविध सामाजिक, आर्थिक और भाषाई पृष्ठभूमियों से आने वाले छात्रों की आवश्यकताओं को संबोधित करना शिक्षकों के लिए जटिल कार्य है। समावेशी शिक्षा के लिए व्यक्तिगत मार्गदर्शन आवश्यक है, जो संसाधनों के अभाव में कठिन हो जाता है।

## 8. करियर प्रगति और प्रेरणा

पदोन्नति, वेतन-प्रगति और मान्यता की प्रक्रियाएँ कई बार प्रदर्शन से अधिक प्रक्रियाओं पर निर्भर दिखती हैं। इससे शिक्षकों की प्रेरणा और नवाचार क्षमता प्रभावित होती है।

## 9. मानसिक स्वास्थ्य और कार्य-संतुलन

निरंतर मूल्यांकन, प्रकाशन-दबाव और प्रशासनिक अपेक्षाएँ शिक्षकों के मानसिक स्वास्थ्य पर प्रभाव डालती हैं। कार्य-जीवन संतुलन बनाए रखना एक महत्वपूर्ण चुनौती है।

## समाधान और आगे की दिशा

उच्चतर शिक्षा में शिक्षकों की चुनौतियों के समाधान हेतु निम्नलिखित उपाय आवश्यक हैं-

शिक्षक स्वायत्तता और विश्वास आधारित अकादमिक संस्कृति को अपनाया जाये ।  
सतत व्यावसायिक विकास (CPD) और डिजिटल/AI साक्षरता को बढ़ावा दिया जाये।  
शोध के लिए समय, संसाधन और अनुदान प्रदान किए जाएँ ।  
गैर-शैक्षणिक कार्यों में तर्कसंगत कमी की जानी चाहिए ।  
मानसिक स्वास्थ्य समर्थन और कार्य-संतुलन नीतियाँ अपनाई जानी चाहिए ।

### निष्कर्ष

शिक्षा की गुणवत्ता सीधे शिक्षकों की स्थिति, सशक्तिकरण और संतुष्टि से जुड़ी है। यदि शिक्षकों को अकादमिक स्वतंत्रता, आधुनिक संसाधन और सम्मानजनक कार्य-परिस्थितियाँ प्रदान की जाएँ, तो उच्चतर शिक्षा राष्ट्रीय विकास की प्रमुख प्रेरक शक्ति बन सकती है। शिक्षकों का सशक्तिकरण ही ज्ञान-समाज और विकसित राष्ट्र की आधारशिला है। विकसित भारत की दिशा में शिक्षक वह धुरी है जिसके चारों ओर राष्ट्र का भविष्य घूमता है। चाहे वह AI की चुनौती हो, गैर-शैक्षणिक कार्यों का बोझ हो, नैतिक मूल्यों का ह्रास हो या नियामक सुधारों का दबाव- इन सबका समाधान शिक्षकों के सशक्तीकरण (Empowerment) में निहित है। जब हम शिक्षक को तकनीकी रूप से सक्षम, प्रशासनिक रूप से मुक्त और सामाजिक रूप से सम्मानित बनाएंगे, तभी 2047 का भारत वास्तव में एक %विश्व गुरु% के रूप में उभरेगा।

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