



GOVERNMENT OF HARYANA

HARYANA 2047

Trillion Dollar Plus Economy
Non-Stop Life Force of Viksit Bharat





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We pave the path towards a Haryana that not only flourishes but also sets the bar for inclusive growth and enduring prosperity, leaving an indelible legacy for posterity.

Haryana's journey of development is both exciting and inspiring, marked by remarkable progress and growth. It fills me with pride to witness that the Vision for 2047, aligned with Hon'ble Prime Minister Sh. Narendra Modi's vision of a Viksit Bharat by 2047, is anchored in the values of inclusivity and prosperity for all. Through a process of collaborative co-creation, the diverse wisdom and expertise of our community have been leveraged, shaping a future that embodies the aspirations of every individual from Haryana. I extend my heartfelt gratitude to UNDP India and all government departments for their invaluable contributions in crafting this visionary blueprint for a Viksit Haryana. Together, we pave the path towards a Haryana that not only flourishes but also sets the bar for inclusive growth and enduring prosperity, leaving an indelible legacy for posterity. As we march forward, let us remain steadfast in our commitment to realise the full potential of Haryana, ensuring that every citizen contributes and benefits from our collective endeavour towards a prosperous and harmonious future.

Shri Nayab Singh Saini
Hon'ble Chief Minister,
Government of Haryana





Together, let us continue to work towards translating the vision into reality, building a future where Haryana shines as a beacon of prosperity, progress, and inclusivity for all its citizens.

Haryana has experienced a consistent upward trajectory of growth and development over the years, marking a significant evolution in its economic and social landscape. From robust economic expansion to fostering inclusive development, the commitment to the well-being and prosperity of our residents remains unwavering. I am happy to see that the vision for Haryana in 2047 stands as a testament to the bold aspirations and pragmatic approach towards realising a future where every individual can flourish.

Through a co-creative process involving various stakeholders, including government departments and UNDP India, we have crafted a comprehensive roadmap that reflects the diverse perspectives and needs of our people. This collective endeavour adds depth and substance to the vision, ensuring its resonance with the aspirations of every Haryanvi.

I extend my heartfelt gratitude to all those who have contributed to shaping this vision, recognising the dedication and tireless efforts of individuals and organisations alike. Together, let us continue to work towards translating the vision into reality, building a future where Haryana shines as a beacon of prosperity, progress, and inclusivity for all its citizens.

Shri Anurag Rastogi, IAS
Chief Secretary,
Government of Haryana





We are laying the foundation for a state that not only embraces growth but also serves as a beacon of excellence and innovation for generations to come.

Haryana stands as a stalwart of growth, firmly committed to propelling development at every juncture. Engaging in this co-creation initiative fills us with immense pride as we actively contribute to Haryana's momentous journey of growth and progress. As we collectively shape Haryana's vision for 2047, our dedication to realising ambitious goals remains unwavering. This collaborative effort epitomises our steadfast commitment to fostering positive change and steering Haryana towards a future characterised by prosperity, inclusivity, and sustainable development. Together, we are laying the foundation for a state that not only embraces growth but also serves as a beacon of excellence and innovation for generations to come. With each step forward, we reaffirm our resolve to uphold Haryana's legacy as a growth-oriented state, ensuring that our collective efforts pave the way for a future filled with opportunities and progress for all.

Dr. Raj Nehru
Director General,
Swarna Jayanti
Haryana Institute
for Fiscal Management

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The completion of the Haryana Vision @ 2047 document has been made possible through the invaluable contributions and steadfast support of several distinguished individuals and organisations to whom we extend our heartfelt gratitude.

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We are also grateful to Shri Anurag Rastogi, IAS, Chief Secretary, Government of Haryana, whose guidance and administrative acumen have been instrumental in steering this project towards its successful completion.


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We extend our sincere appreciation to the nominated participants whose thoughtful insights and perspectives enriched the strategic discourse and broadened the scope of our vision for Haryana@2047.

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We extend our deepest appreciation to Shri J. Ganesan, IAS, Shri Ashok Kumar Meena, IAS, Shri Chander Shekhar Khare, IAS, Shri Yash Garg, IAS, Shri Prabhjot Singh, IAS, Shri Rajnarayan Kaushik, IAS, Shri Sachin Gupta, IAS, Shri Akhil Pilani, IAS, Ms. C. Jayasharadha, IAS, Shri Sonu Bhatt, IAS, Shri Yash Jaluka, IAS, and Shri Shashvat Sangwan, IAS, for their valuable inputs and constructive feedback which have been instrumental in shaping this strategic roadmap for the state's future.

A decorative graphic in the top-left corner consisting of several concentric, overlapping circular arcs in shades of orange, blue, and pink, creating a sunburst or target-like effect.

We are grateful for the invaluable guidance, expertise, and technical assistance provided by Dr. Narendra Kumar Bishnoi, Ph.D., Professor of Economics, whose rigorous empirical policy insights from his research on state fiscal dynamics were instrumental in guiding the target setting and strengthening the vision of this document in a concrete, empirically-backed manner.

We wish to express our gratitude to the UNDP Haryana team for their crucial role in bringing the Haryana @ 2047 vision exercise to fruition. They seamlessly coordinated with the Chairpersons and Member Secretaries of the six Working Groups, mobilised all the departments to actively partake in the Visioning Exercise, and engaged external stakeholders to present their insights in the workshops. The team was effectively led by Shri Vikas Verma, along with Shri Rishi Raj Sharma, Shri Satinderpal Singh Chahal, Ms. Sharan Suri and Ms. Priya Sadhu.

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Each of these individuals and organisations has played a pivotal role in shaping and advancing the strategic framework outlined in this document. Their collective efforts and commitment have laid a solid foundation for realising a prosperous and sustainable future for Haryana.



NOTE TO THE READERS

Haryana Vision @ 2047 is a strategic blueprint for positioning Haryana as a trillion dollar plus economy by the year 2047. The document outlines a comprehensive strategic roadmap and short-term and long-term interventions that transcend different government departments and organisations.

It may be noted that it is not a static roadmap, but a continuously evolving and living framework designed to remain responsive to emerging opportunities and challenges. Anchored in strategic foresight and adaptive governance, this document will guide our trajectory toward a prosperous, equitable, and sustainable Haryana by 2047. As this document outlines a long-term vision spanning two and a half decades, it is designed to be a living document, to be periodically updated under the ownership of the Department of Future.

Throughout this document, the term growth rate is indicative of the real growth rate unless explicitly stated otherwise. Furthermore, Net State Value Added (NSVA) has been used instead of Gross State Domestic Product (GSDP) as the principal measure of economic output. NSVA is considered for analysis and development planning as it excludes depreciation (consumption of fixed capital), thus providing a cleaner and more precise measure of actual economic value creation within the state. Readers should note that terms NSVA and GSDP may have been used interchangeably in some parts of this document, but NSVA remains the primary analytical anchor for the conclusions.

The projections presented here are not rigid forecasts but constitute a dynamic framework, subject to continuous refinement in tandem with evolving socio-economic landscapes. As a living document, it will integrate ongoing learnings, updated data and projections, and innovative solutions through scheduled updates and stakeholder engagement. The mechanism for continuous evolution will include Annual Addendums, including publication of a concise annual report detailing progress, updated metrics, and emergent trends. This document will translate to sector-specific action plans that serve as a guiding beacon intended to stimulate substantive discussions to arrive at detailed localised plans for each district.

While meticulous efforts have been made to ensure the accuracy of the data referenced in the report, it is important to acknowledge that not all aspects may have undergone independent verification, and some variations in the datasets may persist across various sources. The inclusion of certain entities or products in this document does not imply endorsement or recommendation by the Government of Haryana. Any constructive feedback towards improvement of this report is sincerely welcome.

HARYANA @2047

Trillion Dollar Plus Economy

Non-Stop Life Force of Viksit Bharat

To build a globally competitive, inclusive, and sustainable Haryana by 2047 - the NON-STOP LIFE FORCE of Viksit Bharat.

By focusing on nurturing youth and empowering women as equal and powerful contributors, Haryana aims to become a thriving, trillion-dollar-plus, sustainable, and developed economy where even the most vulnerable are not left behind.

A LIFE FORCE, fostered by

Future-Ready Governance

A LIFE FORCE, nurtured through

Future-Proofed Human Settlements

A LIFE FORCE, built on

Future-Resilient Finance and Security

A LIFE FORCE, based on

Future-Focused Education and Skills

A LIFE FORCE, assured of

Future-Envisioned Industrialisation

A LIFE FORCE, guaranteed by

Future-Secure Agriculture and Food

A LIFE FORCE, bonded by

Future-Ensured Families

A LIFE FORCE, supported by

Future-Foundation Builders



GOVERNANCE MISSION

Future-Ready Governance
Managed by Department of Future

The AAA Approach
Anticipatory, Adaptability and Agile



STRATEGIC MISSIONS

**1. Future-Resilient
Finance and Security**

The SSS Approach
Safe, Secure and Sustainable

**4. Future-Secure
Agriculture and Food**

The EEE Approach
Equitable, Eco-Friendly
and Experimental Farming

**2. Future-Proofed
Human Settlements**

The CCC Approach
Clean, Carbon Negative
and Conducive Environment

**5. Future-Focused
Education and Skills**

The RRR Approach
Redesign, Reimagine
and Reinvest

**3. Future-Envisioned
Industrialisation**

The III Approach
AI Innovation, Inclusion
and International Alignment

**6. Future-Ensured
Families**

The HHH Approach
Healthy, Hopeful and Happy



SUPPORTIVE MISSION

Future-Foundation Builders

The TTT Approach
Technology, Trade and Training

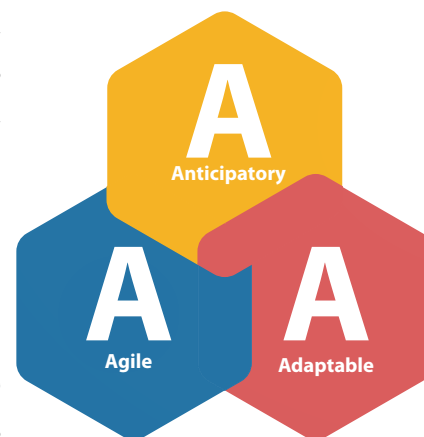
GOVERNANCE MISSION

Future-Ready Governance - The AAA Approach Anticipatory, Adaptability and Agile

In an era of rapid technological advancements, environmental crises, geopolitical shifts, and socio-economic challenges, governments worldwide face unprecedented emerging challenges posed by volatility, uncertainty, complexity, and ambiguity (VUCA). Traditional governance frameworks often focus on immediate issues, leaving nations ill-prepared for long-term disruptions such as climate change, artificial intelligence (AI) risks, demographic shifts, and emerging global crises like pandemics.

To address this, "Department of Future" has been established which will ensure that this forward-thinking governance model is designed to anticipate, adapt, and respond swiftly to emerging challenges. This approach is built on the **AAA Framework: Anticipatory, Adaptable, and Agile**.

By embracing these principles, governments can proactively shape the future rather than merely react to crises.



1. ANTICIPATORY GOVERNANCE: Foreseeing Challenges and Opportunities: Anticipatory governance involves forecasting future trends, challenges, and opportunities before they become crises. This requires data-driven decision-making, strategic foresight, and scenario planning.

For example, Estonia is a global leader in digital governance. It anticipated the importance of cybersecurity and became one of the first nations to introduce e-Residency and blockchain-secured government records. This foresight protected the country from cyber threats while attracting global entrepreneurs.

Another example is how Singapore's Smart Nation Initiative uses AI and big data to predict urban needs, from traffic management to healthcare requirements. By anticipating demographic shifts and technological advancements, Singapore ensures long-term sustainability.

2. ADAPTABLE GOVERNANCE: Shifting Priorities with Changing Realities: An adaptable government does not resist change but embraces it. This requires flexible policies, innovative leadership, and the ability to pivot when necessary.

For example, during the COVID-19 pandemic, New Zealand adapted its policies rapidly, shifting from a containment strategy to a full-scale economic recovery plan. The government provided targeted financial aid, adjusted lockdown measures based on data, and supported businesses in adopting digital solutions.

Another example is that of the United Arab Emirates (UAE). They have created a Ministry of Possibilities to experiment with new governance models. It adapts quickly to emerging global trends, from AI to sustainability, ensuring the country remains competitive in a fast-changing world.

3. AGILE GOVERNANCE: Fast and Efficient Institutional Response: Agility means that governments can respond swiftly without major bureaucratic hurdles. This requires simplified processes, empowered decision-making, and the use of technology to enhance efficiency.

Our own example of Aadhaar biometric identification system allowed the government to distribute subsidies and benefits directly to citizens, eliminating corruption and delays. This agile system was particularly effective during crises like the COVID-19 pandemic when direct cash transfers were made quickly to those in need.

The Department of Future will serve as a think tank and strategic planning body, working alongside traditional ministries to embed foresight into departmental governance, focusing on the following:

- **Trend Analysis and Strategic Foresight:** Conduct research and analysis on emerging technologies, socio-economic shifts, and global disruptions.
- **Risk Assessment:** Evaluate potential threats to national security, economy, and society, such as resource shortages, AI ethics, or cyber risks.
- **Policy Innovation:** Propose adaptive policies to future-proof sectors like healthcare, education, and energy.
- **Global Collaboration:** Participate in international dialogues to address transnational issues like climate change or digital governance.
- **Public Awareness:** Educate citizens about future risks and opportunities, fostering resilience and innovation.

With the establishment of the pioneering Department of Future, Haryana signals its commitment to long-term foresight, innovation, and resilience—while transforming today's actions into tomorrow's opportunities.

The Department of Future, has been established after studying the 'Ministries of Future' operationalised in many other countries. It will offer several strategic advantages like enhanced resilience, improved decision-making, sustainable growth, competitive edge, and build public trust.

It will symbolise a paradigm shift in governance, addressing the need for departments to think beyond present-day challenges. By institutionalising foresight, state departments can build adaptive capacities, foster innovation, and secure sustainable growth pathways. It will not only help Haryana prepare for the future but also position it as a leading state in an era defined by transformation and uncertainty.

Examples of Ministries of Future Worldwide

UAE: The UAE's Ministry of Cabinet Affairs and the Future spearheads national foresight efforts. It launched initiatives like the UAE Centennial 2071, a long-term vision focused on creating a knowledge-based economy and improving quality of life. Additionally, the Dubai Future Foundation operates under this ministry to drive innovation through projects like the Museum of the Future and the Dubai Future Accelerators, which test groundbreaking solutions.

Finland's Committee for the Future: Part of the Finnish Parliament, this committee analyses emerging global trends and assesses their implications for Finland. It produces reports on themes like AI, sustainability, and demographic changes, influencing legislative priorities to align with future needs.

South Korea's Ministry of Science and ICT: This ministry integrates foresight into technological and scientific advancement. By focusing on emerging technologies like AI, quantum computing, and green energy, South Korea secures its position as a tech powerhouse while addressing long-term challenges like ageing populations and energy security.

SUPPORTIVE MISSION

Future-Foundation Builders – The TTT Approach Technology, Trade, and Training

Building a future-ready governance system requires a solid foundation. Haryana's TTT Approach—Technology, Trade, and Training—focuses on digital governance, global investment, and capacity building to lay a strong foundation for the state to be a leader in trust-driven governance and economic prosperity.

1. TECHNOLOGY: Digital Empowerment for All

Technology forms the foundation of modern governance. Haryana's Parivar Pehchan Patra [(PPP)(Family ID)] acts as a dynamic citizen registry, enabling the delivery of over 500 schemes in a targeted, transparent, and integrated manner. It provides every household with a verified digital identity, allowing personalised benefits, real-time service tracking, and reduced duplication.

The Family ID platform will be upgraded for AI-driven eligibility checks and proactive welfare alerts. While international examples like Estonia and MP's e-District offer reference points, PPP remains one of India's most advanced governance platforms.

To ensure inclusive digital access, Haryana will expand digital literacy programmes, aiming for one digitally literate member per household—drawing from models like Kerala's Akshaya initiative. The state will also integrate AI and Blockchain to automate workflows, enhance transparency, and support paperless governance.

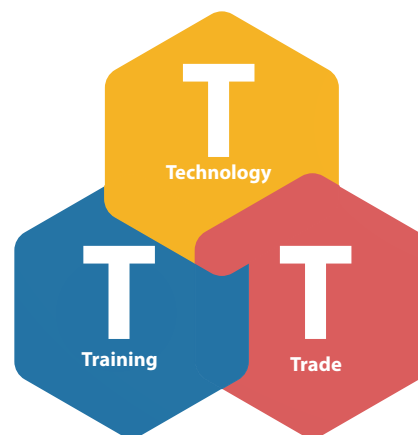
Upcoming mobile apps and portals will provide one-click access to services such as land records, licenses, and grievances. These capabilities will be further strengthened by innovations from the Centre of Excellence in AI at Gurugram, enabling intelligent, data-driven public service delivery.

2. TRADE: Expanding Global Investment and Education

To build a strong and resilient economy, Haryana must attract foreign investment and establish itself as an education hub. The state will host global investment summits to attract Foreign Direct Investment (FDI) in manufacturing, Information Technology (IT), and green energy. Gujarat's Vibrant Gujarat Summit, which brought in billions in investment, can be a model for Haryana's investment outreach strategy. Haryana-based companies can be encouraged to invest in emerging markets through government-backed financial incentives. Haryana can learn and emulate the examples of states which have promoted state businesses globally through dedicated international trade partnerships. Haryana's universities can partner with global institutions to attract students from Africa, the Middle East, and Southeast Asia.

3. TRAINING: Capacity Building for Government Functionaries

A future-ready government requires continuous skill development and training for its officials. Haryana can equip its citizens with essential digital skills like cybersecurity, and data-driven governance and management training, including leadership and social engineering for all state employees to improve implementation efficiency. Telangana's Blockchain District Initiative, where officials receive specialised blockchain training, could be adapted for Haryana.





BIG ACTIONS

1. Governance 3.0 Training Academy

A specialised academy to upskill all government employees in AI, data analysis, and advanced digital governance, making transparency, efficiency, speed, and innovation the hallmarks of Haryana’s administration.

2. One-Click e-Governance Revolution

The government will reimagine public service delivery, placing every essential service—such as licensing, land records, certificates—one click away, backed by a broad-based digital literacy drive that leaves no citizen behind.

3. Haryana Global Gateway Initiative

The state will host biannual global investor summits and set up an International Innovation Zone to attract foreign companies and top universities, transforming Haryana into a premier hub for global trade and education.

EXECUTIVE SUMMARY

As India charts its course toward becoming a developed nation by 2047, Haryana stands poised to serve as its dynamic catalyst—a vibrant powerhouse driving national transformation. This vision document establishes Haryana's ambitious roadmap to emerge as a trillion dollar plus economy by 2047, through strategic frameworks spanning six critical domains: sustainable finance, future-ready education, holistic healthcare, climate-resilient agriculture, smart infrastructure, and balanced regional development. Anchored in foresight methodology and collaborative governance, this vision transcends conventional planning by anticipating emerging challenges while leveraging Haryana's inherent strengths.

Through its pioneering **"AAA Governance" approach—Anticipatory, Adaptable, and Agile**—and mission-driven implementation strategies, Haryana commits to nurturing youth potential, empowering women as equal contributors, and ensuring inclusive prosperity where no citizen is left behind, with every family digitally integrated through PPP and universal social protection coverage by 2047. This executive summary distills the comprehensive blueprint that will guide Haryana to continue to be a “non-stop life force” of a fully developed India by 2047.

WHERE ARE WE?

Back in 1966, when Haryana came into being, few could have predicted just how quickly it would rise. Blessed with fertile plains and nestled around Delhi, the state used its geography, grit, and forward-thinking leadership to fuel steady economic growth. The Green Revolution of the 1960s was a turning point—transforming Haryana from a modest farming region into one of India's agricultural powerhouses. From less than 26 lakh tonnes of foodgrain in its early days, production skyrocketed to over 208 lakh tonnes by 2023–24¹. By 2047, Haryana aims to combine this agricultural success with sustainable farming, zero stubble burning, and restored groundwater balance.

With this agricultural success, a new story began—industrialisation. Agro-processing took root first, and then manufacturing flourished. Faridabad grew into a manufacturing base, while Panipat, Yamunanagar, and Hisar found their strengths in textiles, plywood, steel, and PVC pipes. Then came Gurgaon's moment—sparked by Maruti Udyog in the 1980s, the city later became the face of India's booming Business Process Outsourcing (BPO) and IT services industry.

Over the decades, Haryana's economy remained resilient. From 1980–81 to 2024–25, it averaged an impressive annual Gross State Domestic Product (GSDP) growth of 6.84%, reaching as high as 8.95% during the 2000–2010 decade. To sustain this trajectory, Haryana targets a NSVA of INR 152.46 lakh crore by 2047, anchored in advanced manufacturing, clean energy, and digital services (Annexure 2). But the journey hasn't been without its bumps. The COVID-19 pandemic dealt a heavy blow, causing an economic contraction of 8.34% in 2020–21. And though the state has bounced back in parts, the recovery has been uneven. With a robust GSDP growth rate of 11.8% (2024–25), higher than the national average of 9.9%, and a per capita income of INR 3,53,181.55,² Haryana is positioned as one of India's most economically dynamic states. The state will aim to become number one in national per capita ranking by 2047 through equitable and regionally balanced growth. Haryana's economic and agricultural successes are commendable, but challenges in education, gender safety, environmental

sustainability, and employment must be addressed with clear goals: achieving 100% literacy, halving gender gaps in workforce participation, reducing PM2.5 levels by 60%, and providing universal health coverage with AI-enabled diagnostics. By bridging regional disparities, strengthening job opportunities for women, improving environmental policies, and enhancing digital security, Haryana can truly establish itself as a model state for inclusive and future-ready growth.

For years, Haryana was a frontrunner in per capita income (PCI)—often the top performer among major Indian states since 2001–02. But that lead has narrowed. Telangana overtook Haryana in 2020–21, Karnataka followed in 2022–23, and by 2024–25, Tamil Nadu had also moved ahead, placing Haryana fourth in the national PCI rankings among major states. These shifts are more than just numbers—they're signals. Signals that it's time to rethink, reform, and rebuild with resilience at the core of future policy decisions. Accordingly, Haryana will focus on cutting regional disparities, expanding jobs for women and youth, and making green and digital sectors the new growth engines.

Haryana's Competitive Edge

The economy's structural evolution underpins Haryana's sustained above-average growth in the past three decades. Going forward, structural reforms will focus on green growth, services innovation, and equitable rural transformation to sustain momentum to 2047. Between 1999–2000 and 2023–24, Haryana's primary sector's share of GSDP fell from 33.6%³ to 9.1%⁴, and employment in agriculture declined from 53.6% to 27.5%⁵. Over the same period, the tertiary sector grew to account for over 50% of GSDP (2023–24), while industrial and service activities absorbed the workforce lost from agriculture. The transition towards a more formalised economy has led to over 40% growth in regular salaried employment.

1. Economic and Industrial Growth: Haryana has emerged as a leading industrial and business hub. The state was ranked a "Top Achiever" in the State Business Reform Action Plan 2020⁶ and secured a strong position in the LEADS 2022⁷ rankings. It is among the top five states for industrial employment, driven by strong infrastructure, logistics hubs, and metropolitan development authorities in Gurugram, Faridabad, Panchkula, Sonapat, and Hisar. Moreover, the Integrated Multi-Modal Logistics Hub in Narnaul has improved trade efficiency, making Haryana an attractive destination for investors. AI and Machine Learning (ML) specialisation courses at Shri Vishwakarma Skill University (SVSU), along with 51 industry training partners, are strengthening the state's workforce for the future economy.

2. Agricultural Excellence: Agriculture remains the backbone of Haryana's economy, growing at an impressive rate of 9.9 %⁸ in 2024-25. The state boasts some of the highest wheat (6,177 kg/ha) and rice (7,000 kg/ha)⁹ yields in the country. Haryana is also a leader in milk production, with 122.2 lakh tonnes annually and a per capita availability of 1,105 grams per day¹⁰. Additionally, multiple farmer benefit schemes include Bhavantar Bharpayee Yojana, Mera Pani Meri Virasat and Har Khet Swasth Khet, etc.

3. Social and Digital Advancements: Haryana has 100% electrification in villages and has connected all targeted habitations with all-weather roads under the Pradhan Mantri Gram Sadak Yojana (PMGSY)¹¹. It also has a youth employability of 68%, as per the India Skills Report 2025¹². The state police's use of AI to block 4.9 lakh fraud numbers, saving INR 76.85 crore, showcases Haryana's commitment to digital governance and cybersecurity¹³.

Haryana's Areas of Improvements

Educational and Employment Gaps: The state of Haryana demonstrates a compelling narrative of progress, having made impressive strides toward comprehensive human development and educational access. Commendable enrolment rates across school-level education, including a Gross Enrolment Ratio (GER) of 102.5%¹⁴ in the Middle stage (Classes VI-VIII), affirm the foundational strength of the system. Furthermore, female literacy has risen substantially, reaching 72.5% by 2021¹⁵. However, this impressive momentum appears constrained in the final educational transition: the GER in higher education stands at 33.3%. This gap indicates an uneven pathway to opportunity, underscoring a critical challenge in realising the state's full human capital potential. Bridging this disparity is key to future equitable growth, particularly when considering the higher attainment levels achieved by regional peers like Himachal Pradesh, which recorded a GER of 43.1% in the same period.

This education gap directly affects employment, as unemployment rates stand at 3.1% (rural) and 4% (urban), with female Labour Force Participation Rate (LFPR) at a concerning 24.2%¹⁶.

There are now 2734 sub-centres, 408 Primary Health Centres (PHCs), 122 Community Health Centres (CHCs),¹⁷ and 13 medical colleges as part of the expanding health infrastructure. Infant Mortality Rate (IMR) dropped to 28 and Maternal Mortality Rate (MMR) dropped from 127 to 89¹⁸. The Sustainable Development Goal (SDG) target of 80 is still not met by the life expectancy at birth (Male: 69.37 and Females: 72.66)¹⁹. Disparities in service quality between rural and urban areas continue.

Gender and Social Disparities: Haryana is proactively tackling gender and social disparities, with an aim to reduce crime rates against women from the current 110.3 per lakh to under 60 by 2030 and under 10 by 2047. A focused approach is also being taken to address crime against children, with a current rate of 70.2 per lakh population in 2024²⁰.

The government is also working diligently to ensure equitable access to basic amenities across all regions. Efforts are underway to address the disparity in sanitation facilities, which stands at 91.7% in Jhajjar compared to 71.7% in Mewat. Additionally, the state is focused on increasing access to clean cooking fuel, aiming to close the gap between districts like Faridabad, with an 89.3% access rate, and Mewat, where the rate is currently 22%²¹.

Environmental and Water Crisis: Haryana faces a severe water crisis, with demand at 35 lakh crore litres, while availability is only 21 lakh crore litres, leaving a deficit of 14 lakh crore litres. Alarmingly, 85 out of 141 blocks (60%) have over-exploited groundwater, posing a long-term sustainability threat²².

Additionally, PM 2.5 pollution levels exceed World Health Organisation (WHO) guidelines by 2.7 times, making Haryana's air quality hazardous²³. Cybercrime incidents surged from 224 cases in 2015²⁴ to 681 in 2022, with an incidence rate of 2.5 per lakh population²⁵, signalling a growing challenge in digital security.

Growth Opportunities: Building Tomorrow's Haryana

Infrastructure and Connectivity Revolution

The Global City project in National Capital Region (NCR) stands poised to transform Haryana into a premier hub for finance, technology, and innovation by attracting global businesses and top-tier talent. Additionally, the Delhi-Panipat Regional Rapid Transit System (RRTS) will significantly boost connectivity, with an estimated 7.79 lakh daily riders by 2031,²⁶ reducing congestion and increasing regional integration.

The Delhi-Mumbai and Amritsar-Kolkata Industrial Corridors, covering 60% of Haryana's area, will further accelerate industrialisation, attracting investments and enhancing trade opportunities²⁷.

These transformative corridors, working in tandem with critical water infrastructure improvements like Gurugram's Water Supply remodelling and the Mewat Feeder Pipeline, establish the foundation for sustainable urban expansion through 2050.

Economic Diversification and Employment Generation: Haryana's vibrant Micro, Small and Medium Enterprises (MSME) sector represents an economic powerhouse with the potential to generate 10 million job opportunities, serving as the cornerstone in the state's journey toward a trillion dollar plus economy. Simultaneously, innovative agricultural approaches like hydroponics [(13.53% Compound Annual Growth Rate (CAGR))²⁸ and precision agriculture (6.12% CAGR)²⁹ present a sustainable alternative to traditional farming, addressing food security while optimising precious land and water resources.

The burgeoning plant-based meat industry—valued at USD 5.06 billion in 2022, is projected to quadruple by 2030, opening new frontiers in food innovation and sustainability³⁰. Supporting these developments, the Haryana Startup Policy, Draft E-Waste Recycling Policy, and an 8,000 sq. ft. incubation space for startups collectively nurture a flourishing ecosystem for entrepreneurship and green technology advancement³¹.

Sustainable Development Initiatives: The upcoming Haryana Solar Policy targets 6 GW of renewable energy by 2030, marking a major shift towards clean energy. Additionally, the state's goal of utilising 975.12 MLD treated wastewater by 2025 and 1,100.84 Million Litres per Day (MLD) by 2028—reinforces its long-term sustainability vision³². Together, these forward-looking initiatives will enhance resource efficiency, strengthen climate resilience, and substantially reduce environmental impact across the state.

Governance and Institutional Reforms: Haryana has embraced digitalisation, as evidenced by the Antyodaya Saral Portal, which offers more than 600 online services. Identification of Direct Benefit Transfer (DBT) beneficiaries is done using PPP. Haryana is ensuring increased access to healthcare in remote areas through Telemedicine & e- Upchar ; finance and personnel accountability through Performance Budgeting & Human Resource Management System (HRMS); adherence to the Right to Service Act norms through time-bound delivery for 300+ services and smart governance of Smart Cities & e-Panchayat through dashboards for villages and data-driven urban planning.

Haryana's Challenges: Future Risks

Policy Challenges - To achieve developed-economy status, Haryana must address the issue of the possibility of **Middle Income Trap (MIT)**³³: Haryana is almost an Upper Middle Income Economy with PCI of around USD 4000. Most of the academic research and global experiences suggest that until proactive policy steps are initiated in a timely manner, growth momentum might get derailed. The phenomenon of plateauing growth is called MIT.

There are two factors that can contribute to Haryana stuck in the MIT. First is the declining share of agriculture which is presumed as a bad deal to agriculture and therefore protested³⁴. Second and more importantly the policy focus may not shift from investment (expanding infrastructure—roads, power, schools, hospitals) to efficiency, innovation and competitiveness³⁵. Investment is required in human capital, Research and Development (R&D), entrepreneurship, and knowledge diffusion³⁶. Innovation also generates positive externalities, and the agglomeration of skilled, creative people drives economic dynamism³⁷.

Moreover, spatially balanced development ensures more equitable distribution of prosperity³⁸. Therefore, policy must evolve from mere capital formation to enabling human capital and commercialising innovations reaching across all regions of the state.

Technological Transition and Workforce Adaptation

While AI and automation promise unprecedented efficiency gains, they simultaneously present significant employment challenges, with projections indicating 23% structural job displacement over the next five years. Without robust re-skilling and upskilling programmes, substantial portions of the workforce risk obsolescence. Additionally, resistance to technological adoption in traditional sectors threatens to impede innovation and economic advancement. The substantial investment requirements for advanced technologies, robotics, and automation systems necessitate carefully calibrated financial strategies that balance economic growth imperatives with social inclusion priorities.

Sustainable Development Hurdles

The scarcity of affordable land continues to constrain industrial expansion, creating barriers for emerging businesses. Concurrently, Haryana's accelerating urbanisation contributes to extreme weather events and climate change impacts that threaten long-term sustainability goals. Agricultural productivity and food security face mounting pressure from soil degradation caused by waterlogging and salinity, demanding innovative approaches to soil health management and water conservation techniques.

Rural outmigration, the curriculum-industry connection, and youth unemployment and skill mismatch pose a significant challenge in future growth of Haryana. MSME constraints including the need to guarantee credit availability, technology adoption, and value-chain integration in order to maintain its competitiveness and scalability also needs to be addressed. Policy evaluation is hampered by the absence of precise, real-time data and indicators.

Digital and Environmental Vulnerabilities

As Haryana advances its digital infrastructure, escalating cybersecurity threats pose increasing risks to data integrity and public confidence. AI-driven crime prediction models potentially introduce algorithmic biases that could result in discriminatory policing practices, highlighting the need for enhanced oversight and transparency mechanisms. The expanding electric vehicle sector brings its own sustainability challenges, including battery production impacts, hazardous materials management, and water-intensive manufacturing processes. Without comprehensive waste management frameworks, Haryana faces potential environmental and public health consequences that could undermine development gains.

Haryana: The Weight of its Past

Foundational Strengths and Policy Innovation: Balanced regional development, reinforced by extensive road networks, has strengthened connectivity while stimulating economic activity throughout the state. The government's forward-thinking policy initiatives—including the IT & Electronic System Design and Manufacturing (ESDM) Policy, Solar Power Policy (2016), Bio-Energy Policy (2018), and EV Policy (2022)—have established frameworks for sustainable, technology-driven economic advancement. Social development efforts, particularly gender equality and inclusive growth initiatives like Beti Bachao Beti Padhao (BBBP), combined with financial governance reforms through the Haryana Accountability of Public Finances Act (2019), have strengthened transparency and social equity. The achievement of 100% Open Defecation Free (ODF) status in 2017³⁹ marked a significant public health milestone.

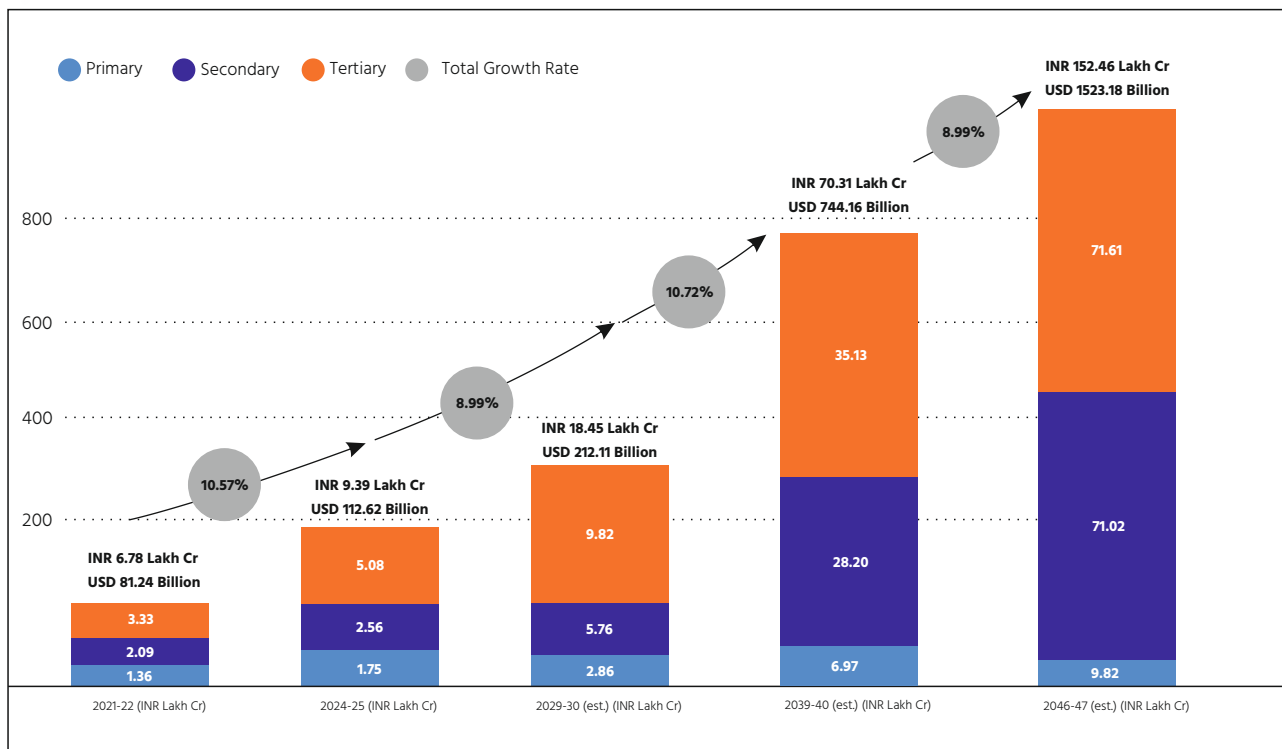
Persistent Challenges and Structural Limitations: Despite progress, Haryana continues to grapple with concerning health indicators—70.4% of children and 60.4% of women suffer from anaemia⁴⁰, while childhood stunting affects over one-quarter of the state's children across both urban and rural areas. The persistently skewed sex ratio (910 females per 1,000 males in December 2024)⁴¹ and female labour force participation (20.7%) remains a challenge despite targeted gender-focused policies. Adding to these are the MMR 89⁴² and U5MR 33.3⁴³ and a neonatal mortality rate of 21.6 (Urban: 19.0; Rural: 22.7 - NFHS 5) above benchmarks and GER in higher education 33.3⁴⁴ lagging behind peers. Rising lifestyle diseases, evidenced by hypertension affecting nearly one-quarter of the male population, signal emerging public health challenges. Economic development remains disproportionately concentrated in the NCR region, perpetuating unbalanced industrial growth. Gurgaon and Faridabad account for ~70% of GST and MSMEs in other districts stagnate.

Widening skills-industry gaps hamper youth employability. Agricultural sustainability faces mounting pressure from post-harvest losses and crop residue burning. Groundwater depletion and excessive pesticide application continue to degrade soil health, threatening agricultural sustainability.

Haryana stands at a transformative inflection point, with ambitious infrastructure projects, emerging industries, and sustainability initiatives poised to accelerate economic development, technological innovation, and environmental progress. Successfully navigating this future requires strategic foresight that leverages inherent strengths while proactively addressing emerging challenges. Through targeted workforce development, sustainable industrial policies, and robust digital security frameworks, Haryana can establish itself as a model state for innovation, inclusivity, and sustainability in the coming decades.

WHERE DO WE WANT TO GO?

Sectoral Share in State NSVA* for Trillion Dollar Plus Economy Goal by 2047 (at current prices)



Graph 1: Sectoral Share in State NSVA* for Trillion Dollar Plus Economy Goal by 2047 (at current prices)

Source : NSVA Values and Sectoral Shares for 2021-22 and 2024-25 (Advance Estimates) are taken from the Department of Economics and Statistical Affairs, Government of Haryana. Projections for 2030, 2040, and 2047 are sourced from the research paper,

"Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" by Prof. N. K. Bishnoi (GJUST Hisar) & Ms. Gargi Boora (Assistant Professor) (Annexure 2).

*NSVA (Net State Value Added) is used instead of GSDP as it excludes depreciation, providing a cleaner measure of actual economic value creation. This makes it more suitable for Total Factor Productivity (TFP) analysis—which measures technological progress and efficiency gains beyond just labour and capital inputs—and development planning. NSVA typically runs 8-12% lower than GSDP but offers greater precision for assessing sustainable growth and avoiding middle-income traps.

Haryana VISION 2047

To build a globally competitive, inclusive, and sustainable Haryana by 2047 - the NON-STOP LIFE FORCE of Viksit Bharat. By focusing on nurturing youth and empowering women as equal and powerful contributors, Haryana aims to become a thriving, Trillion Dollar Plus, sustainable and developed economy, where even the most vulnerable is not left behind.

1. Finance and Security - By 2047, Haryana will have established a robust and **Future-Resilient Finance and Security** framework, prioritising sustainability, resilience, and innovation. Our vision is to create a financial system that not only supports economic growth but also incorporates green financing to ensure environmental sustainability.

2. Education, Skilling and Employment - By 2047, Haryana will have transformed its education, skilling, and employment landscape to lead the nation in developing a **Future-Focused, Educated and Skilled** workforce – prepared for a developed Haryana and the global market. Our state will be recognised for its seamless integration of quality education with the dynamic needs of industries, fostering innovation and entrepreneurship while ensuring social security for all workers.

3. Health and Nutrition - By 2047, Haryana will lead the nation in building a pioneering health and nutrition ecosystem that is equitable, innovative, and preventive. Harnessing the power of advanced technologies and inclusive strategies, the state will focus on **Future-Ensured Families** who can thrive in a healthier, empowered society, free from the burdens of malnutrition, disease, and disparity.

4. Agriculture & Allied Sectors, Food and Nutrition - By 2047, Haryana will **Future-Secure Agriculture and Food** and create an ecosystem where every farmer—from smallest to largest—thrives through equitable agrarian reforms and the promotion of innovative markets, practices and technologies. It will be a global leader in sustainable agriculture that balances productivity with planetary health, establishing new benchmarks for inclusive growth and ecological harmony by embracing climate resilience, prioritising organic and natural farming, ensuring food security and environmental protection.

5. Growth Enablers and Infrastructure Development - By 2047, Haryana's approach towards **Future-Envisioned Industrialisation** will be to ensure its infrastructure and industries are the benchmarks of innovation, sustainability, and inclusivity. With a focus on green, smart, and accessible infrastructure, the state is committed to bridging disparities and transforming its energy, logistics, and digital landscapes – advancing both economic performance and quality of life.

6. Regional Development and Local Self-Government - By 2047, our vision is to ensure that every district and community in Haryana lives in a **Future-Proofed Human Settlement** which thrives through equitable growth, environmental harmony, and technological innovation. Through collaborative governance and empowered local bodies, we envision a state that not only meets the current needs but also anticipates and shapes a prosperous future for all its citizens.

Viksit Haryana @ 2047- At a Glance

| Demographic Profile | Social Profile | Economic Profile |
|---|--|--|
| <p>~ 3.77 crore (~ 3 crore currently)⁴⁵</p> <p>~ 34-38 years Median Age (~ 29-30 currently)</p> <p>Life Expectancy Male: >75.0, Female: >80.0 (Male: 69.37 Female: 72.66 in 2021)⁵⁰</p> | <p>Multidimensional Poverty Index <0.01 (~7.07% in 2019-21)⁴⁶</p> <p>Female Labour Force Participation Rate >45% (24.2% in 2024)⁴⁸</p> <p>Female Literacy Rate 100% (65.94% in 2024)⁵¹</p> <p>MMR (per 1,00,000 live births) <10 (89 currently in 2020-22)</p> | <p>USD 1.52 trillion (INR 152.46 Lakh Crore) State NSVA (Current)⁴⁷ (USD 112.62 Billion in 2024-25)</p> <p>INR 39,74,460 (USD 39,709) Per Capita Income (NSVA) (INR 3,53,182 currently)⁴⁹</p> <p>Youth Unemployment Rate (15-29 years) <4% (10.7% in 2024)⁵²</p> <p>Renewable Energy share in total installed capacity >70% (8.06% in 2021)</p> |

Possible Future Scenarios

As Haryana charts its course toward 2047, three potential development pathways emerge, each shaped by policy choices, investment priorities, and governance approaches. The state stands at a pivotal crossroads—with options to maintain current trajectories, navigate disruptive forces, or pursue a transformative vision aligned with its trillion dollar plus economy aspirations.

Business-as-Usual Scenario: A Path of Gradual Progress with Persistent Gaps

If Haryana continues with incremental progress, it risks stagnation. Persistent gender gaps will limit women's participation in the workforce, educational stagnation will hinder innovation, and healthcare improvements will remain slow. Agriculture, the backbone of the state's economy, will continue to face climate risks, market volatility, and unsustainable practices. Economic growth will be steady but hampered by MSME challenges and rising cyber threats. The rural-urban divide will widen, and governance inefficiencies may persist.

Disruptive Futures Scenario

Negative disruptive future could arise if AI-driven automation leads to widespread job losses, economic instability worsens due to global financial shocks, and cybersecurity threats escalate, increasing socio-economic tensions. Unchecked urbanisation and environmental degradation could strain public resources, exacerbating social unrest and economic slowdowns. If governance fails to address security concerns, persistent crime and instability could further derail progress.

Positive disruptive future offers Haryana an opportunity to leapfrog into a dynamic and innovation-led economy. By leveraging digital literacy, AI-driven education, and healthcare innovations, Haryana can improve access to quality services. Agricultural modernisation, sustainable policies, and a strong MSME ecosystem can enhance productivity and income levels. Strategic regional development, particularly projects like the Delhi-Panipat RRTS and Haryana Orbital Rail Corridor, can transform connectivity and economic activity.

Aspirational Future Scenario: Haryana's Best Path Forward

To fully capitalise on opportunities and mitigate risks, Haryana must prioritise an aspirational future—a holistic, sustainable, and innovation-led development model.

1. Economic and Technological Leadership

- Startup India and Make in India policies should be leveraged to enhance Haryana's manufacturing and tech ecosystem.
- MSME modernisation, green jobs, and financial innovations will ensure economic resilience.
- Strategic investments in AI, automation, and digital infrastructure can boost entrepreneurship and employment rather than displace jobs.

2. Healthcare Transformation

- Haryana must recognise healthcare as a fundamental right and invest in universal, high-quality medical access.
- Telemedicine, public-private partnerships, and preventive healthcare programmes can improve life expectancy and productivity.

3. Sustainable Agriculture and Environmental Priorities

- Agroforestry, precision farming, and integrated supply chains will ensure food security and climate resilience.
- Investments in renewable energy, Electric Vehicles (EVs), and e-waste recycling will reduce carbon footprints and pollution.

4. Infrastructure and Regional Development

- The Global City project in NCR should be developed as a model of sustainable urbanisation.
- Infrastructure projects, such as metro expansion and horticulture markets, must be accelerated.
- The Haryana Solar Policy's 6GW target should be exceeded to become a leader in renewable energy.

5. Resilience and Global Partnerships

- Green financing and climate adaptation strategies will ensure long-term sustainability.
- Risk management frameworks and global collaborations will enhance disaster preparedness and governance.

For Haryana, the choice is clear. A business-as-usual approach will slow progress, while a negative, disruptive future could deepen inequalities and economic challenges. However, an aspirational future—driven by innovation, sustainability, and strategic investment—offers a transformative vision. By leveraging its strengths and mitigating risks proactively, Haryana can emerge as a leader in economic resilience, sustainability, and inclusive growth by 2047.

HOW WILL WE REACH THERE?

For Haryana to achieve its aspirational future and ambitious goals, it proposes to adopt a Mission mode approach pivoted around the **Governance Mission managed by the Department of Future**. This will translate into a focused, action-oriented and time-bound approach through **six Strategic Missions** and a cross-cutting **Supportive Mission**.

GOVERNANCE MISSION

Future-Ready Governance - the AAA Approach

In an era of rapid technological advancements, environmental crises, geopolitical shifts, and socio-economic challenges, governments worldwide face unprecedented emerging challenges posed by volatility, uncertainty, complexity, and ambiguity (VUCA). Traditional governance frameworks often focus on immediate issues, leaving nations ill-prepared for long-term disruptions such as climate change, AI risks, demographic shifts, and emerging global crises like pandemics.

A newly formed Department of Future will ensure that this forward-thinking governance model is designed to anticipate, adapt, and respond swiftly to emerging challenges. This approach is built on the AAA Framework: Anticipatory, Adaptable, and Agile. By embracing these principles, governments can proactively shape the future rather than react to crises. To ensure the smooth implementation of multi-sectoral, externally funded programmes,

Haryana has created a dedicated **SPV**. This institutional mechanism handles projects like the **AI innovation initiative** and the **Clean Air Project**, offering continuity without the need for repetitive project units. In doing so, Haryana has embedded the idea of **“institutions as infrastructure”**—building administrative muscle that endures beyond project cycles.

SIX STRATEGIC MISSIONS

1. Future-Proofed Human Settlements – The CCC Approach

Haryana is committed to provide a sustainable future to all residents which depends on how well we prepare our environment for the challenges ahead. **The CCC Approach—Clean, Carbon Negative, and Conducive Environment**—provides a strategic framework for ensuring environmental resilience and sustainability. This model focuses on restoring natural resources, reducing carbon footprints, and creating a healthy, disaster-resistant ecosystem.

3 BIG ACTIONS - Future-First Growth Zone; Gram Sabha 5.0; Equilead

2. Future-Resilient Finance and Security – The SSS Approach

Haryana is one of India's fastest-growing states, known for its strong industrial base, agricultural dominance, and emerging IT sector. However, to future-proof its economy and society, the state must adopt a future-resilient finance and security framework. **The SSS Approach—Safe, Secure, and Sustainable**—ensures that Haryana progresses sustainably, inclusively, and efficiently, addressing social concerns while driving economic growth.

3 BIG ACTIONS - Trillion NEXT Haryana, Cyber Fort 204; Quantum Ledger Alliance

3. Future-Envisioned Industrialisation – The III Approach

As Haryana aims to become an industrial powerhouse of the future, it will embrace AI-driven innovation, inclusive economic policies, and global sustainability standards. With its strong manufacturing base in automobiles, textiles, steel, power, and IT, the state is well-positioned to lead the way. **The III Approach—AI Innovation, Inclusion, and International Alignment**—will be key to ensuring sustainable and future-ready industrial growth.

3 BIG ACTIONS - AI-Infused Industrial Corridor; She Rise 2.0; Global Green Axis

4: Future-Secure Agriculture and Food – The EEE Approach

Haryana has long been a key agricultural state, contributing significantly to India's food security and grain reserves. However, with climate change, declining groundwater levels, and economic pressures, the state must rethink its agricultural strategies. **The EEE Approach—Equitable, Eco-Friendly, and Experimental Farming**—can transform Haryana's agriculture into a sustainable, resilient, and high-yield sector.

3 BIG ACTIONS - Zero Burn; Green Return Initiative; Agri-Tech City & Smart Storage Network; Sky Harvest 2047

5: Future-Focused Education and Skills – The RRR Approach

Haryana is at a critical juncture where education and skills development must align with future job markets. **The RRR Approach—Reimagine, Redesign, and Reinvest**—offers a roadmap for a future-ready education system that equips students with green skills, industry-relevant expertise, and practical learning methods. Digital skilling infrastructure will be further supported by AI and computing-focused training hubs, including those being developed in Panchkula and Gurugram.

3 BIG ACTIONS - Teach-to-Transform 2.0; Future Skills Programmes; Project Infinity

6: Future-Ensured Families – The HHH Approach

A strong, future-ready state is built on the well-being of its families. Haryana's **HHH Approach—Healthy, Hopeful, and Happy**—focuses on healthcare, financial security, and social infrastructure to ensure that every family can thrive in a rapidly changing world.

3 BIG ACTIONS - Social Security 360° Plan; Health Rise 2047; Family Guard 2047

SUPPORTIVE MISSION

Future-Foundation Builders – The TTT Approach

Building a future-ready governance system requires a solid foundation. **Haryana's TTT Approach—Technology, Trade, and Training**—focuses on digital governance, global investment, and capacity building to lay a strong foundation for the state to be a leader in trust-driven governance and economic prosperity.

3 BIG ACTIONS- Governance 3.0 Training Academy; One-Click e-Governance Revolution; Haryana Global Gateway Initiative

GOALS

| Indicator | Baseline | Target 2030 | Target 2036 | Target 2047 |
|---|---------------------|-------------|-------------|-------------|
| NSVA growth rate (at current prices) (Source: Annexure 2) | 11.09% (2024-25) | 8.99% | 10.34% | 8.99% |

| Indicator | Baseline | Target 2030 | Target 2036 | Target 2047 |
|---|--|--------------------------|------------------------|---|
| NSVA (INR Lakh Crore) (at current prices) (Source: Department of Economics & Statistical Affairs, GOH) | INR 9.39 lakh crore (2024-25) | INR 18.45 lakh crore | INR 40.80 lakh crore | INR 152.46 lakh crore (USD 1.5 Trillion) |
| PCI (at current prices) (Source: Department of Economics & Statistical Affairs, GOH) | INR 3,53,182 | INR 5,68,653 | INR 11,88,904 | INR 39,74,460 |
| Unemployment Rate [Source: Periodic Labour Force Survey (PLFS), Ministry of Statistics and Programme Implementation (MoSPI)] | Urban: 4.0 Rural: 3.1 (2023- 24) | Urban: < 5 Rural: < 3 | Urban: <4 Rural: <2 | Urban: < 3 Rural: < 1 |
| Access to Piped Drinking Water (Source: Ministry of Jal Shakti, DWS for Rural Area and MIS, NSS, MoSPI for Urban) | 97.7 (2020-21) | 100% | 100% | 100% |
| Carbon Intensity of GSDP (Tonnes CO ₂ e/INR Crore) (Source: Trend Analysis of GHG Emissions of Haryana Report) | 176 (2018) | 100 | 71.76 | 20 |
| Female Workforce Participation Rate (15 years and above) (Source: PLFS, 2023-24) | 24.2% | > 32% | > 36% | > 45% |
| MMR (Source: Special Bulletin on Maternal Mortality in India 2020-22) | 89 | 70 | < 49 | < 10 |
| IMR (per 1,000 live births) (Source: Sample Registration System, Office of the Registrar General, India, May, 2022) | 28 | 15 | < 11 | IMR: < 5 |

| Indicator | Baseline | Target 2030 | Target 2036 | Target 2047 |
|---|--|--|--|---|
| Sex Ratio at Birth (Source: Department of Health and Family Welfare, Haryana) | 910 (2024) | Gender Parity in Birth Ratio | Gender Parity in Birth Ratio | Gender Parity in Birth Ratio |
| Children under 5 Years who are Stunted (Source: National Family Health Survey-5, 2019-21, MoH&FW) | 27.5% | 13.5% | < 10.5% | < 5% |
| Institutional Births (Source: National Family Health Survey-5, 2019-21, MoH&FW) | 94.9% | 100% | 100% | 100% |
| Children aged 12-23 months fully vaccinated (Source: National Family Health Survey-5, 2019-21, MoH&FW) | 81.1% | 100% | 100% | 100% |
| Anaemia (Source: National Family Health Survey-5, 2019-21, MoH&FW) | Children: 70.4% Women: 60.4% | Children: < 40% Women: < 30% | Children: < 29.5% Women: < 24% | Children: < 10% Women: < 15% |
| GER (Source: UDISE+, 2024-25, GoI & All India Survey on Higher Education, 2021-22) | Higher Secondary: 81% Tertiary: 33.3% | Higher Secondary: > 95% Tertiary: > 40% | Higher Secondary: > 96% Tertiary: > 43% | Higher Secondary: > 100% Tertiary: > 50% |
| Youth Unemployment Rate (15-29 years) (Source: Periodic Labour Force Survey (PLFS), 2023-24) | 10.7% | < 7% | < 6% | < 4% |

| Indicator | Baseline | Target 2030 | Target 2036 | Target 2047 |
|--|--|---|--------------------------------------|---|
| <p>Percentage of students in grades 3, 5 and 8 achieving at least a minimum proficiency level in terms of nationally defined learning outcomes to be attained by pupils at the end of each of the above grades (Source: ASER 2024)</p> | <p>Reading Proficiency (Grade 2 level): Class 3 - 32.1% Class 5 - 53.9 % Class 8 - 76.6%</p> <p>Arithmetic Class 3 - 33.1% (Subtraction) Class 5 - 29.4% (Division) Class 8 - 43.1% (Division)</p> | > 90% | 91% | > 95% |
| <p>Growth Rate of Agriculture & Allied Sectors (%) (Source: Department of Economics & Statistical Affairs, GOH)</p> | 8.1 | 5.12 | 5.25 | 3.13 |
| <p>Productivity of Fruits & Vegetables (Source: Department of Horticulture, Haryana)</p> | <p>Fruits: 17.22 Vegetables: 17.4 (M.T./hectare)</p> | <p>Fruits: 20 Vegetables: 21.95 (M.T./hectare)</p> | <p>Fruits: 30 Vegetables: 28</p> | <p>Fruits: > 50 Vegetables: > 40 M.T./hectare</p> |
| <p>Forest Cover to Total Geographical Area (Source: Ministry of Environment, Forest and Climate Change, GoI)</p> | 4.04% (2020-21) | > 4.7% | > 5.15% | > 6% |

| Indicator | Baseline | Target 2030 | Target 2036 | Target 2047 |
|--|----------------|---------------------------------|---------------------------------|---------------------------------|
| <p>Net Area under Natural/Organic Farming (Source: Statistical Abstract of Haryana, 2022-23)</p> | 0.14% | ~ 5% | > 10.2% | > 20% |
| <p>Groundwater Withdrawal against Availability (Source: CGWB, 2023, Ministry of Jal Shakti, GoI)</p> | 134.96% (2020) | Stop the decline in water level | Stop the decline in water level | Stop the decline in water level |
| <p>Rate of Total Crime against women (per one lakh of population) (Source: NCRB Report, 2023, Vol I.)-</p> | 110.3 | < 60 | < 40 | < 10 |
| <p>Rate of Total Crime against Children (per one lakh of population) (Source: NCRB Report, 2023, Vol I.)</p> | 70.2 | 44.65 | 35.5 | 18.7 |

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THE VISIONING PROCESS AND APPROACH

THE VISIONING 7 STEP PROCESS (METHODOLOGY)



*For more details, please see Annexure 1: Methodology

Strategic Foresight Approach

Strategic Foresight is an approach to explore the future, anticipate change, develop transition pathways, and withstand shocks—essentially to “help us act in the present to shape the future we want.” It supports a shift from reactive to proactive governance by equipping systems to be better prepared for uncertainty and complexity.

To develop a resilient, inclusive, and future-ready Haryana Vision @2047, the process was rooted in this Strategic Foresight Approach—a method designed to explore alternative futures and create adaptive strategies. Unlike conventional planning, which assumes continuity, strategic foresight recognises that today’s development landscape is shaped by rapid disruption, systemic shocks, and increasing interdependence. The approach is especially critical amid challenges such as global interconnectedness, climate change hazards, widening digital divides, and fast-paced technological transformation—all of which make future scenarios highly unpredictable and complex.

Rather than predicting specific events, strategic foresight aims to offer **strategic early warnings**—signals of both opportunities and risks that may not yet be visible. These insights help governments hedge decisions, inform large-scale policy and investment choices, and increase preparedness for potential disruptions. Foresight is fundamentally about **risk-and-opportunity management**—supporting anticipatory planning based on robust, evidence-informed insights.

Embedding foresight into governance demands a shift:

- From short-term fixes to long-term impact
- From compliance-based processes to adaptive systems
- From working in the existing system to working on transforming the system

It influences governance structures, operational agility, institutional culture, partnerships, and financing mechanisms—enabling more future-fit strategies. Strategic foresight enhances our capacity to deal with uncertainty, promote innovation, and prepare for a wide range of plausible futures.

From Foresight to Anticipatory Governance

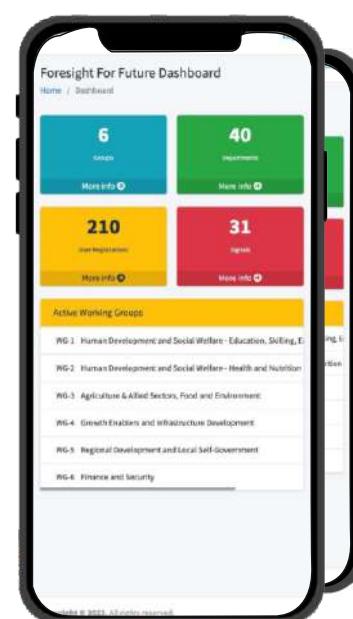
Strategic foresight plays a catalytic role in enabling anticipatory governance. It prompts changes in how institutions think, plan, and act by:

- Reorienting governance structures to support long-term thinking
- Promoting adaptive, risk-informed decision-making
- Encouraging innovation and strategic planning beyond compliance
- Designing policies that allow course correction based on emerging realities

The FFF Toolkit: A Core Enabler

A critical component of this strategic foresight process was the deployment of the FFF Toolkit by UNDP—a structured set of tools developed to operationalise futures thinking and embed foresight in participatory planning. The toolkit enabled participants to:

- Map signals using the **PESTLE** (Political, Economic, Social, Technological, Legal, Environmental) framework to assess risk and opportunity
- Conduct **temporal and polarity analysis** to track trend directions and their potential impacts
- Apply the **Futures Triangle** to explore the interplay of the "weights of the past", "pushes of the present", and "pulls of the future"
- Develop four plausible scenario narratives:
 - Business as Usual
 - Aspirational Future
 - Positive Disruption
 - Negative Disruption
- Identify strategic levers and long-term action pathways



This participatory foresight process helped stress-test assumptions across diverse future conditions, increasing the robustness, adaptability, and resilience of the resulting strategies.

Key Outcomes

The Strategic Foresight Approach led to:

- Enhanced anticipatory capacity across government departments
- Participatory, whole-of-government visioning
- Identification of systemic interlinkages between development priorities
- Development of foresight-informed pathways and transformative strategies

Ultimately, the Haryana Vision@2047 stands as a blueprint for future-oriented governance—grounded in foresight, built through collaboration, and designed to thrive under uncertainty.

Futures Triangle: A Strategic Foresight Tool

What is a Futures Triangle?

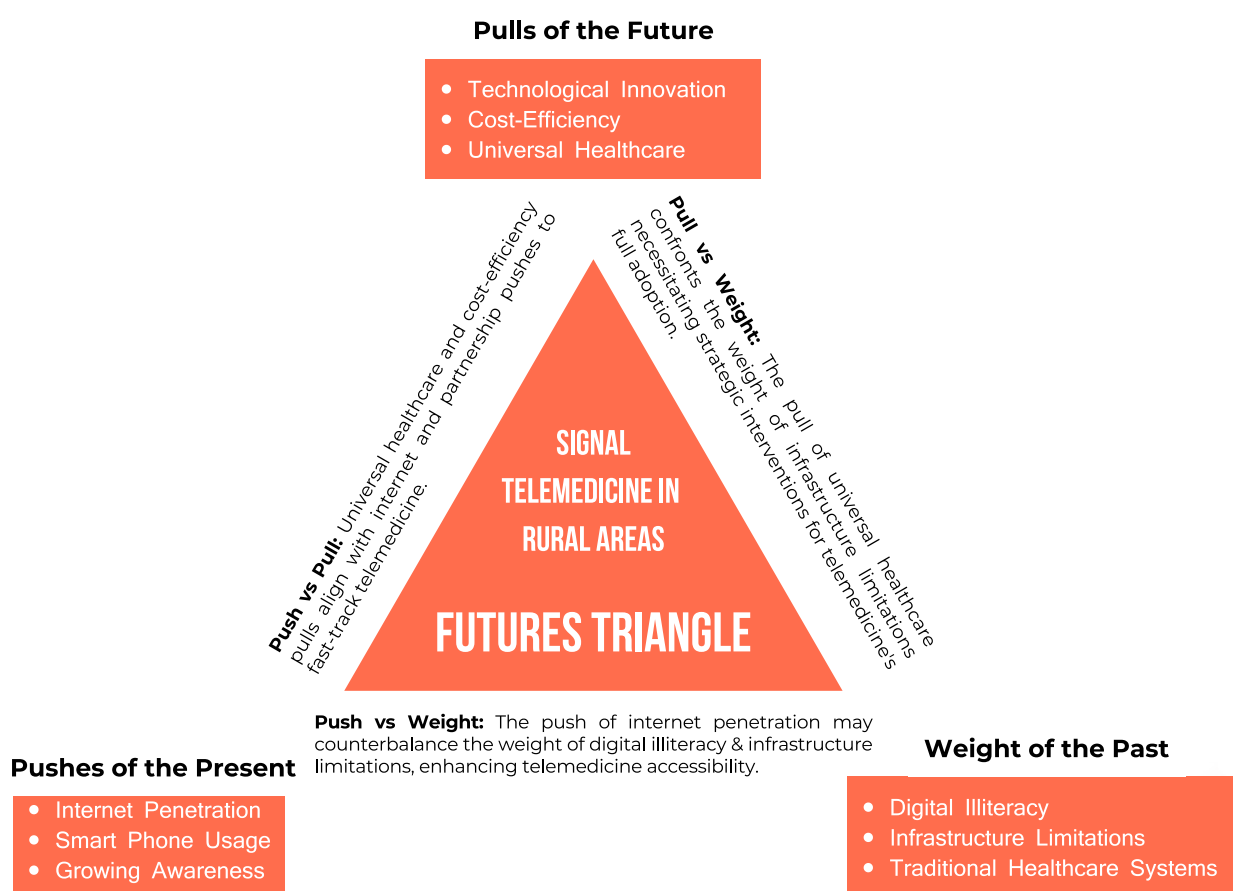
The Futures Triangle is a tool used in strategic foresight to analyse and visualise the three primary forces that shape the future: Pulls of the Future, Pushes of the Present, and Weights of the Past. This tool helps us to understand the dynamics of change and the complex interplay between various forces that influence future scenarios.

Components of the Futures Triangle

Pulls of the Future: These are the compelling visions, goals, or aspirations that draw us toward the future. They act as magnets that pull society in a certain direction.

Pushes of the Present: These are the current trends, issues, or changes that are pushing us from the present into the future. They are the driving forces that propel us forward.

Weights of the Past: These are the legacies, traditions, or existing structures that hold us back or weigh us down, preventing us from reaching the future we desire.







FINANCE AND SECURITY



WHERE ARE WE?

Strengths

- Robust Gross Domestic Product (GDP) Growth
- High Per Capita Income
- Managed Fiscal Deficit
- Growth in the Service Sector
- Budgetary Reforms in Place
- Good Performance of Public Sector Enterprises
- PPP - Parivar Pehchan Patra
- High in Goods and Services Tax (GST) collections

Opportunities

- Advanced Technologies and AI Integration
- Risk Management Strategies
- Blended Financing Model
- Integrated Crime Control Centre
- Digitalisation & Tokenisation

Areas of Improvement

- Increasing Gender-Based Violence
- Increase in Cybercrimes
- Rise in Crimes against Weaker Sections
- Rise in Social Tensions

Threats

- Unpredictable Global Environment.
- Regional Disparities
- Rising Deficit Indicators
- Eroding Trust in Financial and Security Institutions across the World
- Climate Change

WHERE DO WE WANT TO GO?



VISION

To build a robust **Future-Resilient Finance and Security** framework prioritising sustainability, resilience, and innovation



MISSION

To create a **Future-Resilient Finance and Security** framework grounded in three core pillars—**Safe, Secure, and Sustainable (SSS)**—designed to address social challenges while catalysing inclusive economic growth, aiming to meet the 9.39% (constant price) NSVA growth target by 2047.

GOALS

- Trillion Dollar Plus Economy.
- Per Capita GSDP of INR 39,74,460
- Tax-to-GSDP ratio - 15%
- Debt-to-GSDP ratio - < 15%
- Rate of Total Crime against Women (per lakh population) - < 10

ASPIRATIONAL FUTURE

To mirror developed nations through comprehensive, environmentally conscious development, equitable prosperity, and sustainable resilience by adopting green financing initiatives and embracing innovative approaches for a climate-resilient and financially strong economy. To create a robust financial system, disaster preparedness, safety, and security will be priority areas for all citizens to enjoy non-stop economic growth and prosperity even during unexpected changes.

HOW WILL WE REACH THERE?

Financial System Resilience: Strengthen fiscal transparency, create a Medium-Term Debt Strategy, enhance local financial systems, drive financial inclusion, and implement proactive financial risk management.

Green Financing: Establish climate budget frameworks, scale Environmental, Social, and Governance (ESG) reporting, build local green finance capacity, expand green bonds, and implement real-time digital finance monitoring.

Safety & Security: Upgrade cybersecurity and surveillance, deploy AI-driven crime prediction tools, strengthen community policing, and establish integrated real-time security systems.

Partnerships with Developing Countries: Launch joint R&D, foster institutional partnerships, organise trade missions, build cross-border startups, and formalise innovation alliances.

Disaster Preparedness: Implement AI-powered early warning systems, strengthen district-level emergency response, train local communities, and create disaster-resilient infrastructure.

Transition to Green Economy: Create transition frameworks, deploy hydrogen-based industrial processes, support green skills training, build carbon management hubs, and promote circular economy pilots.

3 BIG ACTIONS

01

**Trillion NEXT Haryana
plan for economic growth**

03

**Quantum Ledger
Alliance for digital
governance**

02

**Cyber Fort 2047 for
enhanced security**

INTRODUCTION

Haryana's economic success is evident in its strategic fiscal management and more than doubling of PCI over the last decade. The state has maintained pace with national GDP growth, with a robust GSDP growth rate and a commitment to fiscal prudence, keeping the fiscal deficit below permissible limits. Budgetary reforms have streamlined departmental allocations and introduced innovative funds for research, innovation, and sustainable development. However, the state remains susceptible to external shocks like fluctuating global markets, geopolitical tensions, and emerging security risks.

Recognising that sustained economic growth depends not only on sound financial systems but also on a safe and secure environment for all its citizens, Haryana has pursued an integrated approach that addresses both finance and security as interdependent pillars of inclusive development. This alignment reflects global development frameworks such as SDG 16 and SDG 17, which emphasise strong institutions, public safety, financial resilience, and partnerships as essential enablers of prosperity. Public safety and security in Haryana have seen important strides being made with initiatives like Women Help Desks and increased representation of women police officers. Yet, challenges persist, including rising crimes against women and children, and the growing threat of cybercrimes which highlights the importance of extending the concept of security to encompass physical, digital, social, and financial domains, thus safeguarding citizens of all ages, genders, castes, and communities.

This chapter outlines Haryana's current status, its vision for 2047, and the strategic missions and goals to achieve that vision. It proposes a future-resilient finance and security framework, prioritising sustainability, resilience, and innovation. The state will focus on strengthening financial systems, leveraging green financing, managing the transition to net-zero emissions, fostering partnerships with developing countries, enhancing public safety and institutional security, and prioritising disaster preparedness. Key initiatives include the Trillion NEXT Haryana plan for economic growth, Cyber Fort 2047 for enhanced security, and the Quantum Ledger Alliance for digital governance. By addressing these challenges through integrated strategies, Haryana seeks to build a safe, inclusive, and prosperous future for all its citizens.

WHERE ARE WE?

Current Status

Economic Growth & Fiscal Management

Per Capita Income: More than doubled from INR 1,47,382 (2014-15) to INR 3,53,182 (2024-25) (at current prices).¹

Contribution to National GDP: Increased from 3.41% (2011-12) to 3.71% (2024-25).²

GSDP Growth: Grew by 11.8% in 2024-25, reaching INR 12.13 lakh crore, compared to the national GDP growth of 9.9% (at current prices).³

GST Collection: Achieved INR 1,19,362 crore in FY 2024-25, a 16% growth over 2023-24 fiscal year, securing 5th rank nationally.⁴

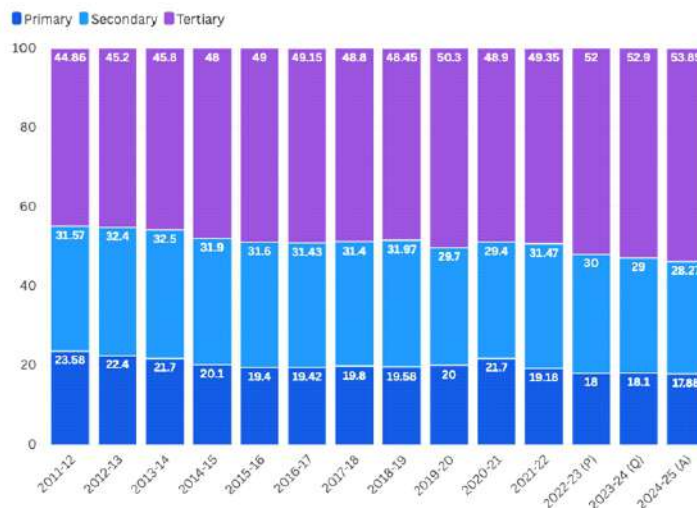
Fiscal Deficit: Contained at 2.7% of GSDP in 2024-25, below the 3.0% limit.⁵

Sectoral Shift: Primary sector share in GSVa declined (20% to 17.9%), while the Services sector share increased (50.3% to 53.9%) between 2019-20 and 2024-25 (at current prices).⁶

State Expenditure: Operations and Maintenance expenditure estimated to increase from INR 1,313.7 crore (2022) to INR 1,737.5 crore (2023-24). Revenue receipt, expenditure, and development expenditure in 2023-24 were 9.3%, 15.3%, and 8.2% of GSDP, respectively.⁷

Budgetary Reforms: Streamlined departmental allocations into 20 rationalised demands organised into eight thematic areas, including funds for research, innovation, and sustainable development. Introduction of the Public Financial Management System (PFMS) has played a crucial role to enhance transparency, accountability and reduce 'Float' in the system.

Fiscal Health: Haryana ranked 14th out of 18 States in NITI Aayog's Fiscal Health Index (2022-23).⁸



Graph 2: Sectoral Contribution to GSVA
(P- Provisional Estimates, Q- Quick Estimates, A - Advance Estimates)
(Source: Department of Economic and Statistical Affairs, GOH)

Public Safety & Security

Women's Safety Initiatives: 239 Women Help Desks operational;⁹ increased proportion of women police officers (9.7% increase in 2021).¹⁰

Policing Technology: Haryana Police ranked first in Crime and Criminal Tracking Network & Systems (CCTNS) implementation and utilising AI to block fraudulent mobile numbers, saving INR 76.85 crore.¹¹

Crime against Women: Crime rate increased significantly from 75.7 per lakh population (2015)¹² to 110.3 per lakh population (2023).¹³ Sexual crimes against women rose from 26.09 per lakh women (2015) to 43.4 (2020) per lakh women.¹⁴

Crime against Children: Trafficking of girl children out of the total children trafficked increased sharply from 26.98% (2015) to 85.71% (2020). Sexual crimes against girl children as a percentage of total crime against children increased from 41.42% (2015) to 49.46% (2020).¹⁵

General Crime Trends:

- Suicide Mortality Rate increased from 13.02 (2015) to 13.70 per 1 lakh population (2020).
- IPC crimes per 1 lakh population increased from 404.26 (2020) to 426.3 (2023).¹⁶
- 71.7 senior citizens per 1 lakh faced crime in 2022.¹⁷
- POCSO Act cases increased from 1,853 (2020)¹⁸ to 2,092 (2022).¹⁹
- 2,217 Arms Act cases reported in 2020.²⁰

Cybercrime: Cyber/IT Act-related crimes against women numbered 90 with 98 victims in 2022 (rate of 0.6 per lakh). 11 incidences of Cybercrime against children were reported (all female victims) in 2022 (rate of 11 per lakh).²¹

FUTURES TRIANGLE (*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

The Futures Triangle analytical framework offers a comprehensive examination of the forces shaping Haryana's financial and security landscape through three intersecting dimensions. The analysis identifies current momentum from fiscal reforms and digital governance initiatives against headwinds of expenditure constraints and emerging security threats. Historical patterns of regional imbalance and rising deficit indicators further influence this dynamic. By mapping these intersecting forces—present drivers, future aspirations, and historical constraints—policymakers can chart strategic interventions to enhance fiscal health, strengthen governance systems, and build a more equitable, secure Haryana by 2047.

Pushes of the Present

Positive

Enhanced investment facilitation through the **Foreign Cooperation Department** for both inbound and outbound investors.

Significant **improvement in the financial performance of Public Sector Enterprises (PSEs)** (From 13 profit-making PSEs with INR 804 crore profit in 2013-14 to 20 profit-making PSEs with INR 1,767 crore profit in 2022-23, reflecting an increase of INR 963 crore).²²

Establishment of the **Directorate of State Audit** to ensure transparency and accountability in government expenditures.

Streamlining of budgetary processes through reforms.

Strengthening of enforcement actions against illegal activities through the establishment of the **Haryana State Enforcement Bureau**.

Establishment of the SDG Coordination Centre (SDGCC) facilitates integrated departmental approaches and significantly improves Haryana's SDG performance.

Implementation of the **Parivar Pehchan Patra** (71.60 lakh families registered, comprising 2.85 crore individuals, as of February 2024).²³

Negative

A significant portion of the state's total revenue receipts, specifically 37.9%, is allocated to meeting committed expenditures such as salaries and pensions, which **limits the funds available for development initiatives**, according to the Budget at a Glance 2025-26, Finance Department Haryana.²⁴

Capital outlay, primarily for infrastructure investment, **has stagnated** and remains low relative to the GSDP.

Haryana lacks a **separate 'Gender Budget Statement'**, limiting its ability to systematically assess and address financial allocations impacting gender equality and women's empowerment.

Challenges persist regarding gender-based violence, inter-caste and inter-religion marriages, and social exclusion, necessitating targeted interventions and resource allocation.

Positive

GST Collections: Increased from INR 22,922.15 crore in 2021–22 to INR 1,19,362 crore Budget Estimate (BE) in 2024–25²⁵. Excise Duty Collections: Increased from INR 7,933.42 crore in 2021–22 to INR 12,650 crore (BE) in 2023–24.²⁶

Establishment of the **Department of Future** to embed anticipatory governance into the state’s development trajectory.

Mahila Thanas have been operationalised across districts to provide gender-sensitive policing and accessible grievance redressal for women.

The **State Emergency Response Centre (dial-112)**, a helpline service, has been launched to offer immediate, integrated police, fire, and ambulance support across the state, improving citizens’ sense of safety and rapid response.

Pulls of the Future

Positive

Utilising advanced technologies and risk management strategies strengthens the resilience of the financial system.

Implementation of blended financing models, integrating public and private funds, **promotes innovation and sustainable development** while enhancing financing accessibility across sectors.

The adoption of advanced data analytics and AI algorithms empowers law enforcement agencies to **predict and prevent future crimes** more effectively, thereby improving public safety and security.

The Haryana State Financial Services Limited, as an in-house treasury manager to Public Enterprises, autonomous bodies, and other State entities, **would enhance financial management and resource utilisation.**

Negative

The state faces **increasing challenges related to cybercrime, data security**, and the protection of personal information amidst growing reliance on technology and the internet.

Delegation of financial powers to the cutting edge is a challenge.

Negative

As society increasingly relies on digital platforms, the **risk of data breaches escalates**, jeopardising privacy and **eroding trust in financial and security institutions.**

Rapid technological advancements expose financial and security sectors to cyber threats, necessitating robust cybersecurity measures for protection.

Potential biases in crime prediction algorithms may lead to unjust accusations or discriminatory practices, undermining public trust in law enforcement.

Weights of the Past

Positive

The Haryana Accountability of Public Finances Act 2019 established a robust framework to ensure accountability of public finances.

The **participation of women in Panchayati Raj Institutions (PRIs) has increased to 42.1%**²⁷, ensuring adequate representation.

Disaster preparedness initiatives like strengthening of Early Warning systems, conduct of special training programmes, and mock drills have enhanced overall resilience and readiness in Haryana.

Negative

GSDP has shown inconsistent trends across sectors, emphasising the importance of targeted development strategies to ensure balanced economic growth.

Persistent regional disparities in development spending.

Unavoidable **increases in revenue expenditures** due to fiscal obligations have strained the state's finances.

WHERE DO WE WANT TO GO?

VISION 2047

By 2047, Haryana will have established a robust and Future-Resilient Finance and Security framework, prioritising sustainability, resilience, and innovation. Our vision is to create a financial system that not only supports economic growth but also incorporates green financing to ensure environmental sustainability.

- A resilient financial system capable of withstanding economic shocks while maintaining growth momentum
- Green financing mechanisms at the core of economic progress
- Industries and manufacturing sectors successfully transition to a new sunrise, an emerging technology-based industry in line with Viksit Bharat's net-zero mandate
- Focus on international strategic partnerships to create new markets that foster mutual growth and knowledge exchange
- Ensure comprehensive security frameworks addressing women's safety, crime prediction, and cybersecurity
- Put in place advanced disaster preparedness systems with robust infrastructure and quick-response capabilities

STRATEGIC MISSION*

Future-Resilient Finance and Security – The SSS approach

Future-Resilient Finance and Security framework grounded in three core pillars—**Safe, Secure, and Sustainable (SSS)**—designed to address social challenges while catalysing inclusive economic growth, aiming to meet the 9.39% (constant price) NSVA growth target by 2047.

1. SAFE: Strengthening Safety for Women, Children, and Labour Force

The **Safe** pillar focuses on strengthening protection for women, children, and workers through integrated monitoring systems across all districts. By expanding smart surveillance, women's help desks, AI-driven public safety monitoring, and structured labour grievance mechanisms, Haryana aims to reduce crime rates against women from the current 110.3 per lakh²⁸ to under 60 by 2030 and under 10 by 2047.



2. SECURE: Ensuring Economic and Cyber Security for Growth

The **Secure** pillar emphasises on economic and cyber security through industrial diversification beyond real estate and automobiles into IT, renewable energy, and logistics sectors to boost manufacturing share in GSDP. This will be reinforced by district-level Cyber Crime Cells, AI-driven fraud detection, and comprehensive cybersecurity training to reduce cybercrime incidence from 2.5 per lakh to under 0.5 by 2047.²⁹

3. SUSTAINABLE Long -Term Financing and Social Balance

The **Sustainable** pillar will implement performance-linked financing mechanisms and balanced social policies, evaluating departments and industries based on clear impact indicators. By expanding models like the Mukhya Mantri Parivar Samridhi Yojana to industries and skill programmes, Haryana aims to improve fiscal metrics, reducing deficit to under 2% of GSDP by 2030 while increasing green finance portfolio from 15% to 25% of total credit.

In pursuit of this vision, the state has outlined several goals across economic growth and public safety.

STRATEGIC GROWTH ACCELERATORS: SECTORAL AND DEMOGRAPHIC PROJECTIONS

The projections for Haryana's State GDP employ a comprehensive triad framework encompassing per capita income, SDG performance, and the Human Development Index (HDI). This framework assesses Haryana's readiness for transition to developed economy status through analysis of historical trends and application of the SGAM for sectoral projections.

To forecast PCI in US dollars, the study projects Haryana's NSVA using the Solow Growth Accounting framework, which inherently accounts for India's economic performance given Haryana's demonstrated high responsiveness to the national economy. The study forecasts the INR -US dollar exchange rate based on Purchasing Power Parity

*Aligned Departments: Finance, Planning, Home, Revenue & Disaster, Training

(PPP) theory, adopting a "realistic scenario" with an average annual depreciation rate of 0.83%, and estimates the evolving World Bank threshold for High-Income Countries (HICs), which has historically grown at approximately 2.383% annually. For HDI projections, two methods are employed: a "normal case" based on average annual improvement of 1.23% and an "optimistic case" reflecting the best year-on-year improvement of 2.35%. The SDG-2030 India Index serves as a proxy for comprehensive development, with a benchmark SDG score of 90 adopted as necessary for avoiding the MIT.

The study outlines three distinct growth scenarios for Haryana's economic trajectory. The Business As Usual (BAU) Scenario extrapolates historical sectoral real growth rates and projects Haryana to achieve high-income status by 2042–43 and become a trillion-dollar economy by 2044–45, with 10.48% average annual growth in PCI in USD.

The Positive Scenario (Achievable Scenario 1 - Estimated Elasticities Method) utilises empirically estimated output elasticities within the SGAM and incorporates strategic assumptions regarding elevated capital and Total Factor Productivity (TFP) growth rates due to policy interventions. This scenario projects Haryana reaching HIC status by 2039–40 and becoming a trillion-dollar economy by 2041–42, with PCI in USD growing at an average annual rate of 8.34%.

The Aspirational Scenario (Achievable Scenario 2 - Fixed Elasticities Method), also based on SGAM, employs fixed output elasticities derived from national-level data and shares similar optimistic assumptions for TFP and capital growth as Achievable Scenario 1. This scenario projects Haryana achieving HIC status by 2038–39 and a trillion-dollar economy by 2040–41, with PCI in USD growing at an average annual rate of 11.89%.

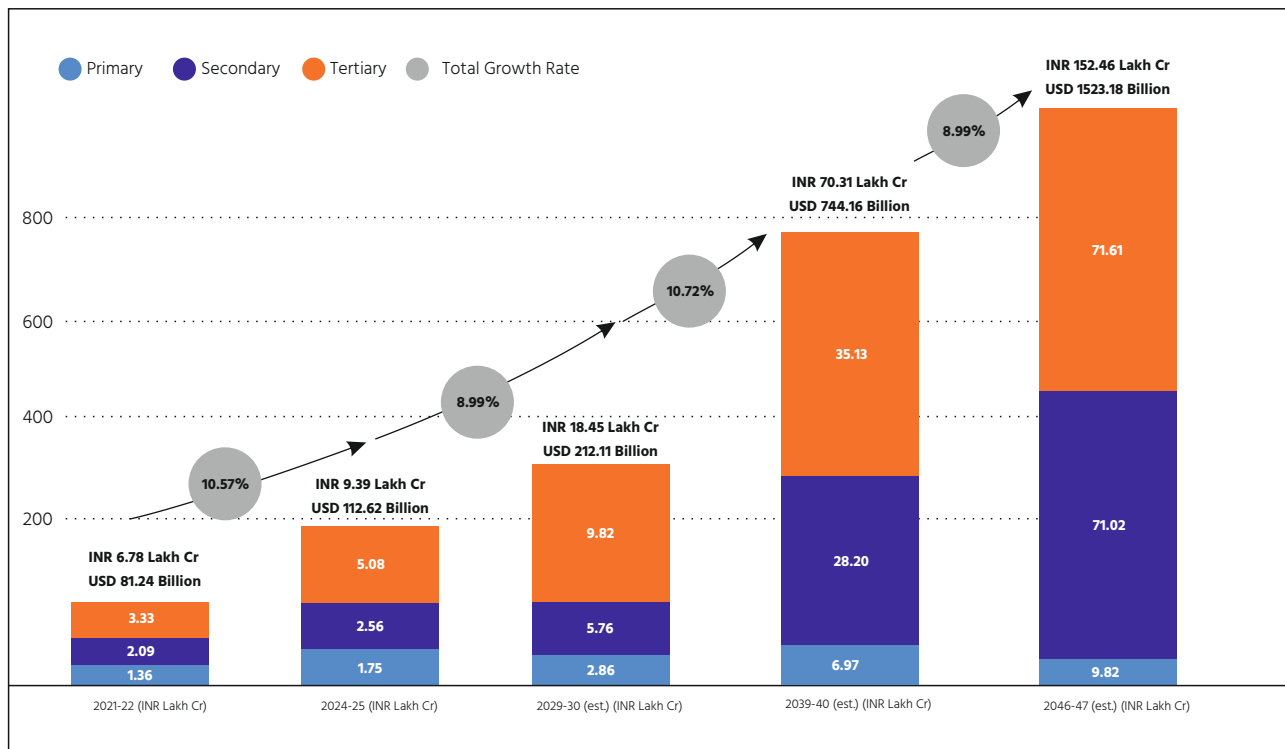
These projections are grounded in rigorous growth accounting analysis. The methodology employs the Perpetual Inventory Method (PIM) for capital stock estimation, utilises workforce data from National Sample Survey Office surveys, and projects future workforce distribution using targeted sector-wise employment growth rates aligned with official population projections. For the projection period, this is divided into three phases: F-1 (2024–25 to 2029–30), F-2 (2030–31 to 2039–40), and F-3 (2040–41 to 2046–47), with capital and TFP growth rates calibrated to reflect policy interventions and eventual maturation effects.

On the human development front, under the normal case, Haryana is projected to achieve the HDI threshold of 0.85 by 2039. Under the optimistic scenario, this milestone could be attained as early as 2031, indicating that with concerted policy action, Haryana could align human development outcomes with its economic ambitions well before reaching high-income status.

Similarly, based on historical patterns of an average annual improvement of 2 points in SDG scores, Haryana is expected to cross a score of 90 by 2032–33, thereby meeting key socio-environmental benchmarks necessary for attaining sustainable high-income status.

For further technical details on the projection methodology, output elasticities, sector-wise growth assumptions, and comprehensive data tables, please refer to Annexure 2.

Sectoral Share in State NSVA* for Trillion Dollar Plus Economy Goal by 2047 (at current prices)

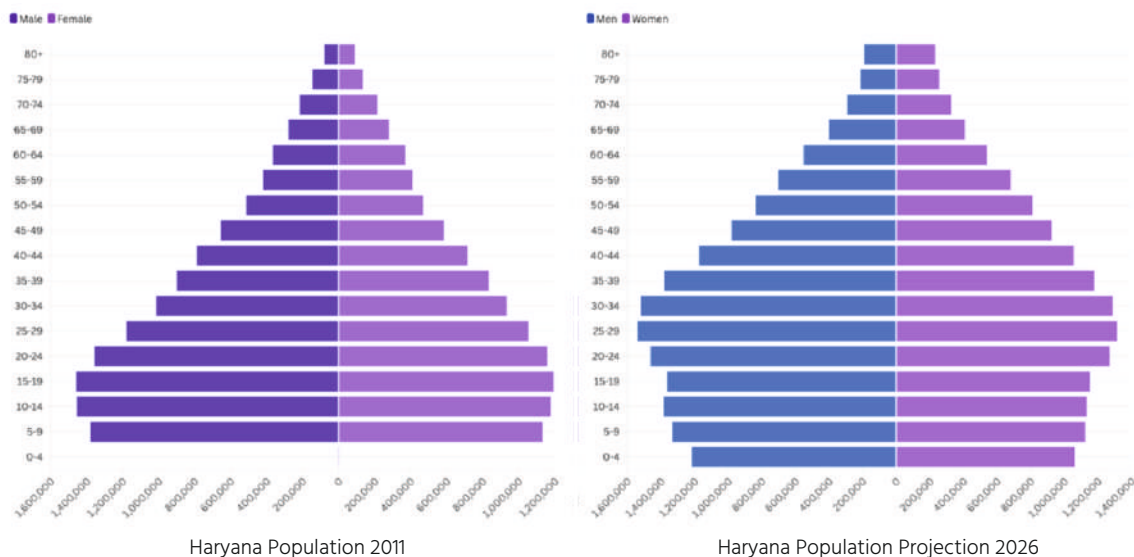


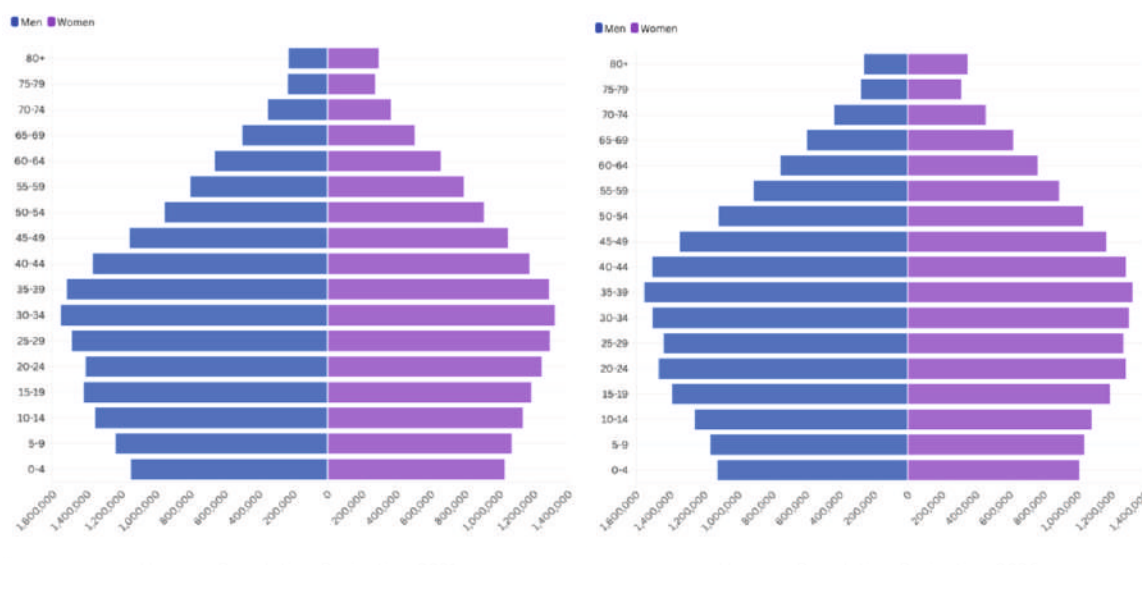
Graph 1: Sectoral Share in State NSVA* for Trillion Dollar Plus Economy Goal by 2047 (at current prices)

Source : NSVA Values and Sectoral Shares for 2021-22 and 2024-25 (Advance Estimates) are taken from the Department of Economics and Statistical Affairs, Government of Haryana. Projections for 2030, 2040, and 2047 are sourced from the research paper, "Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" by Prof. N. K. Bishnoi (GJUST Hisar) & Ms. Gargi Boora (Assistant Professor) (Annexure 2).

*NSVA (Net State Value Added) is used instead of GSDP as it excludes depreciation, providing a cleaner measure of actual economic value creation. This makes it more suitable for Total Factor Productivity (TFP) analysis—which measures technological progress and efficiency gains beyond just labour and capital inputs—and development planning. NSVA typically runs 8-12% lower than GSDP but offers greater precision for assessing sustainable growth and avoiding middle-income traps.

HARYANA POPULATION PYRAMID 2011 TO 2036





Graph 4: Haryana Population Projections
(Source: Census of India 2011)

The total projected population for Haryana in 2047 is 37.73 million.

Haryana's population is projected to grow from 25.36 million in 2011 to approximately 37 million by 2047, with significant demographic transitions including ageing, urbanisation, and an improving sex ratio, all of which will necessitate strategic fiscal planning and social security enhancements to ensure sustainable development.

In pursuit of this vision, the state has outlined several goals across economic growth and public safety:

GOALS

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|--------------|-----------------|--------------|---------------|---------------|---|
| NSVA Growth Rate at Current Prices | 11.09% | Annexure 2 | 8.99% | 10.34% | 8.99% | Projections Based on "Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" (Annexure 2) |
| Per capita Income at current prices (2011-12) | INR 3,53,182 | Annexure 2 | INR 5,68,653 | INR 11,88,904 | INR 39,74,460 | Projections Based on "Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" (Annexure 2) |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|----------|--|-------------|-------------|-------------|---|
| Growth Rate of Manufacturing Sector | 6.8% | Annexure 2 | 10.61% | 12.63% | 10.10% | Projections Based on "Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" (Annexure 2) |
| Tax-to-GSDP Ratio | 6.5% | Finance Department, Haryana Budget Documents 2024- 25 | 10% | 12% | 15% | Organisation for Economic Co-operation and Development (OECD) average tax-to-GDP ratio is approximately 15% |
| Population with Active Digital Banking | 65% | RBI Digital Payments Index for Haryana 2023 | 90% | 94% | 100% | Based on Digital India Vision |
| Women with Bank Accounts | 78% | NFHS-5 State Report for Haryana 2021 | 95% | 97% | 100% | UN SDG target 8.10 for universal financial access |
| Total IPC/BNS Crime Rate (per lakh population) | 426.3 | National Crime Records Bureau (NCRB) Report, 2023, Vol 1 | < 250 | < 197 | < 100 | Based on best-performing states and international benchmarks |
| Police Personnel (per lakh population) | 195 | Bureau of Police Research and Development Data 2023 | 250 | 268 | 300 | UN recommended police-population ratio |
| CCTNS Implementation Score | 85% | MHA CCTNS Status Report 2023 | 100% | 100% | 100% | National target for CCTNS implementation |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|----------|--------------------------|-------------|-------------|-------------|---|
| Rate of Total Crime against Women (per lakh population) | 110.3 | NCRB Report, 2023, Vol 1 | < 60 | < 42 | < 10 | UN SDG 5 targets for eliminating violence against women |
| Sexual Crime against Women (per lakh women) | 43.4 | NCRB Crime in India 2022 | < 20 | < 15 | < 5 | Based on best-performing states (Tamil Nadu, Gujarat, Punjab) |
| Number of POCSO cases | 2,142 | NCRB 2023, Vol 1 | < 1,000 | < 647 | 0 | UN SDG Target 16.2 to end all forms of violence against and torture of children |
| Cyber Crime Incidence Rate (per lakh population) | 2.5 | NCRB 2023, Vol 2 | < 1 | < 0.82 | < 0.5 | Global Cybersecurity Index benchmarks |

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

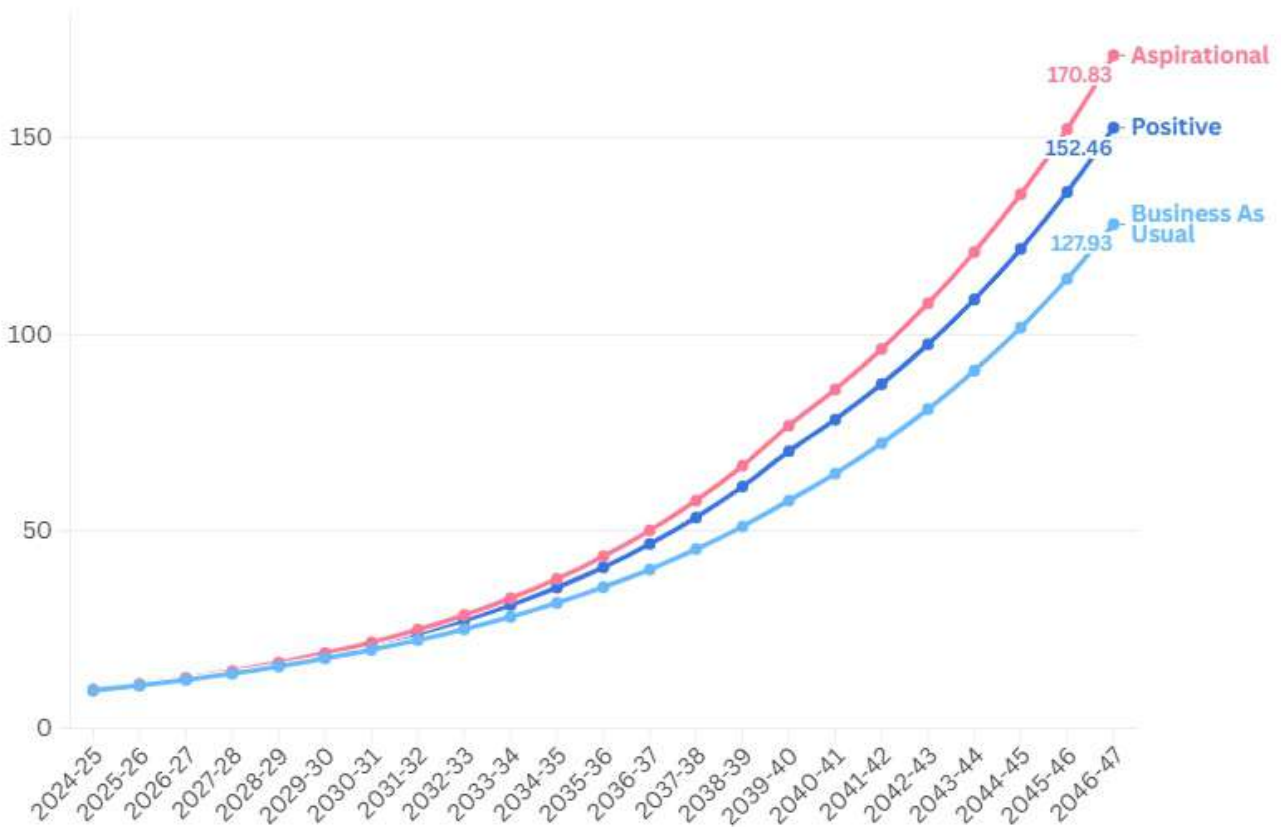
- Haryana continues on its current economic growth trajectory and fiscal prudence in this scenario.
- PCI and GSDP continue to rise steadily, bolstered by ongoing reforms in budgetary processes and strategic allocations towards research, innovation, and sustainable development.
- These reforms are a result of the collaborative efforts of stakeholders, policymakers, and analysts, who have played a crucial role in shaping Haryana's economic and social development.
- However, persistent challenges in public safety and security remain, requiring sustained efforts to address rising crime rates, particularly against women and children.
- While Haryana maintains its economic momentum, a lack of significant disruptions may lead to incremental progress rather than transformative change.
- Haryana's projected GSDP is anticipated to reach USD 1.2 trillion by 2047, assuming an average annual growth rate of 12.52% at current prices. (Annexure2).

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

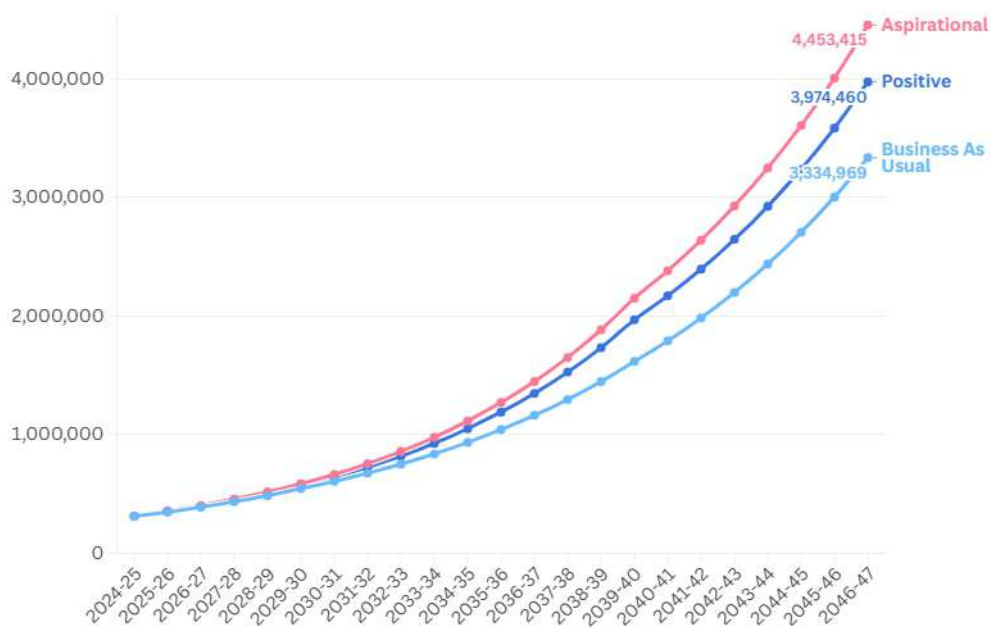
- In this scenario, Haryana would embrace positive measures that propel it into above average prosperity.
- Focus on capitalising on emerging technological opportunities, renewable energy, and sustainable agriculture opportunities for positive growth trajectory.
- Strategic infrastructure, education, and healthcare investments and reforms would lead to inclusive growth and societal well-being.
- Innovative solutions would tackle the root causes of crime, ensuring enhanced public safety and security.
- As a global leader in economic resilience, technological innovation, and social progress, the state will significantly enhance its global standing and reputation, setting new benchmarks for sustainable development.
- Under this scenario Haryana's GDP is expected to grow to USD 1.52 trillion with an average annual growth rate of 13.30% at current prices. (Annexure2).

ASPIRATIONAL FUTURE

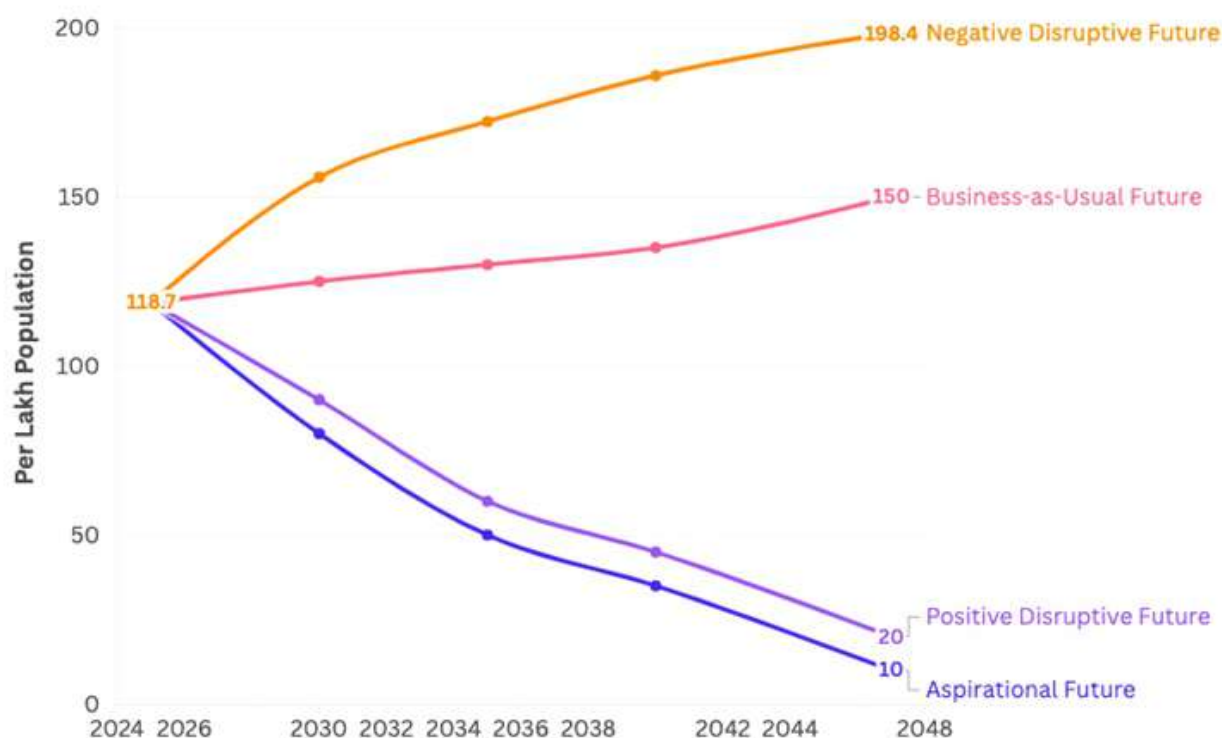
- This scenario assumes the successful implementation of key recommendations from Haryana's Vision 2047. Haryana envisions a future of comprehensive development, equitable prosperity, and sustainable resilience.
- By prioritising green financing and innovation, the state aims for radical reforms towards an environmentally conscious economy.
- Focus on strengthening financial system resilience to sustain growth amid unforeseen challenges.
- Commit to full disaster preparedness and safety, especially for women, children, tourists, and investors.
- Aspire to lead in global partnerships as a premier destination for safe investments and high living standards.
- In the aspirational scenario Haryana's GDP is expected to grow to USD 1.7 trillion with an average annual growth rate of 13.87% at current prices. (Annexure 2).



Graph 5 (a): NSVA Growth (INR Lakh Crore)
(Source :Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth - Prof. N. K. Bishnoi GJUST Hisar & Ms. Gargi Boora Assistant Professor)



Graph 5 (b): Per Capita Income (INR) (at Current Prices)
(Source :Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth - Prof. N. K. Bishnoi GJUST Hisar & Ms. Gargi Boora Assistant Professor)






Graph 5 (c): Rate of Crime against Women

HOW WILL WE REACH THERE?

As we navigate the complexities of shaping an aspirational and ambitious future, to ensure that Strategic Mission is successfully implemented, it becomes imperative to confront the hurdles hindering the realisation of our vision. By identifying and addressing these barriers and issues head-on as mentioned below, we can craft actionable strategies to surmount obstacles and progress towards our shared goal of establishing a stable financial system supported by safe and secure environment that fosters economic growth.

Issues








- 🔍 Financial System Resilience & Fiscal Efficiency
- 🔍 Green Financing/Innovative Financing for Green Economy
- 🔍 Safety & Security (Internal Security, Women's Security, Prediction of Futuristic Crime Patterns, Data Security & Privacy, including Cybersecurity Measures)

-  Partnerships with Developing Countries
-  Disaster Preparedness
-  Managing Successful Transitions of Traditional and Old Technology Industries, Manufacturing, and Services to Modern and Future-Proof Sectors, Pursuing the Net-Zero Emissions Goal

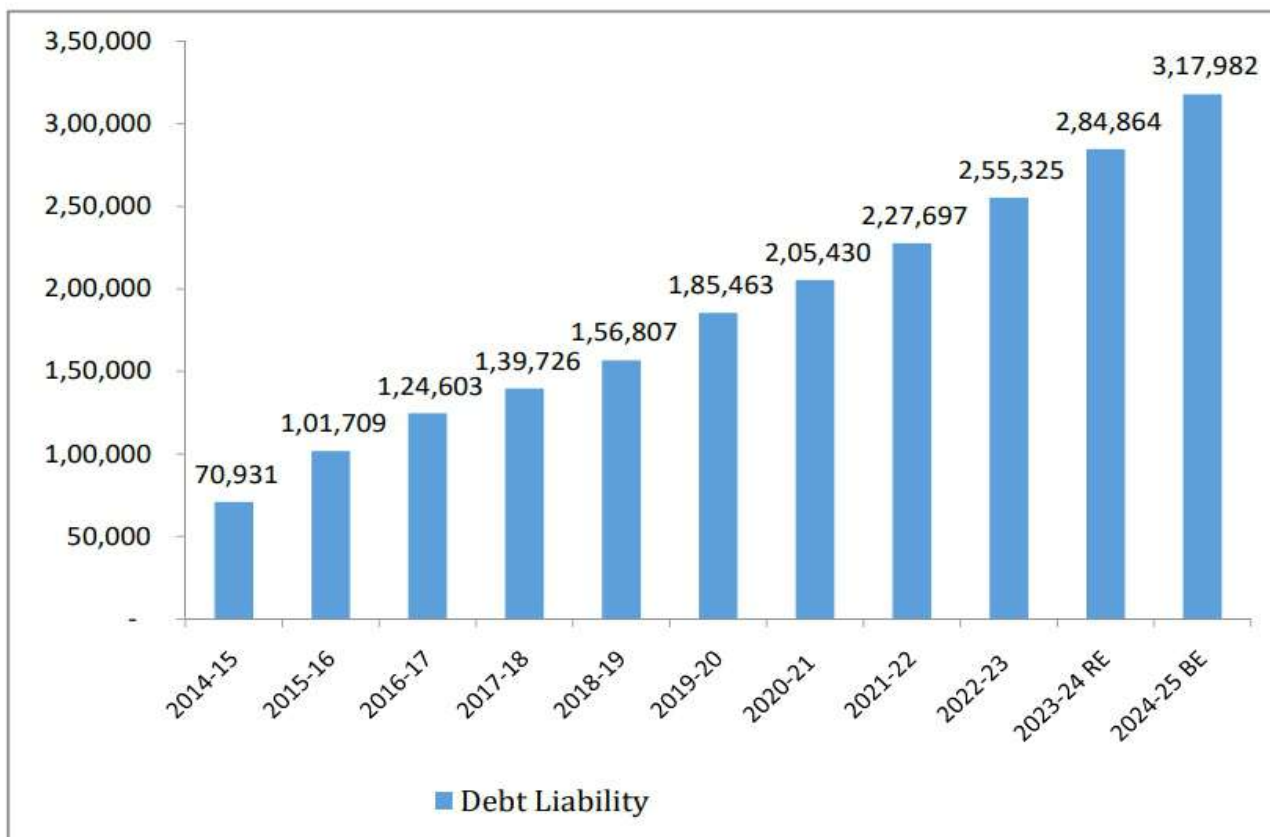
ISSUE 1: FINANCIAL SYSTEM RESILIENCE & FISCAL EFFICIENCY

Haryana's financial system demonstrates resilience through its diverse network of financial institutions, including commercial banks, cooperative banks, Post Office Saving Banks, and Sarva Haryana Gramin Bank branches. The improving Credit-Deposit Ratio indicates more effective utilisation of available funds for lending, which stimulates economic activity. However, the significant portion of expenditure allocated to debt repayment in the 2024-25 budget presents a challenge. While necessary for financial stability, this allocation must be balanced with adequate investment in development initiatives to ensure long-term economic growth. Additionally, opportunities exist to enhance financial inclusion and promote lending to priority sectors like Agriculture, MSME, Housing, Education, and Renewable Energy. Embracing innovative financing mechanisms, particularly in green financing, can support sustainable development while strengthening financial stability.

Current Status

-  Distribution of financial institutions: 4,775 commercial banks, 612 cooperative banks, 20 Indian Postal Payment Banks, and 690 Sarva Haryana Gramin Bank branches (as of 31 March 2025)³⁰
-  Credit-Deposit Ratio of Scheduled Commercial Banks improved from 86% (March 2024) to 89% (March 2025)³¹
-  **Women's Financial Inclusion**³²
 - As of 31 March 2025, 52,70,339 women (50.10% of the total) in Haryana have Pradhan Mantri Jan Dhan Yojana (PMJDY) accounts out of 1,05,19,359 total PMJDY accounts.
 - Out of 4,40,98,537 CASA (Current Account/Savings Account) accounts, 2,33,72,224 (over 53%) belong to women, indicating significant progress in women's financial inclusion.
-  The state's outstanding guarantee peaked at INR 30,387.70 crore in 2015 but decreased to INR 24,342.60 crore by March 2022³³
-  Fiscal deficit at 2.7% of GSDP (2024-25)³⁴
-  Debt-to-GSDP ratio at 26% (2023-24)³⁵
-  Revenue deficit at 1.10% of GSDP (2023-24)³⁶

Trend in State Debt Liability (INR Crore)

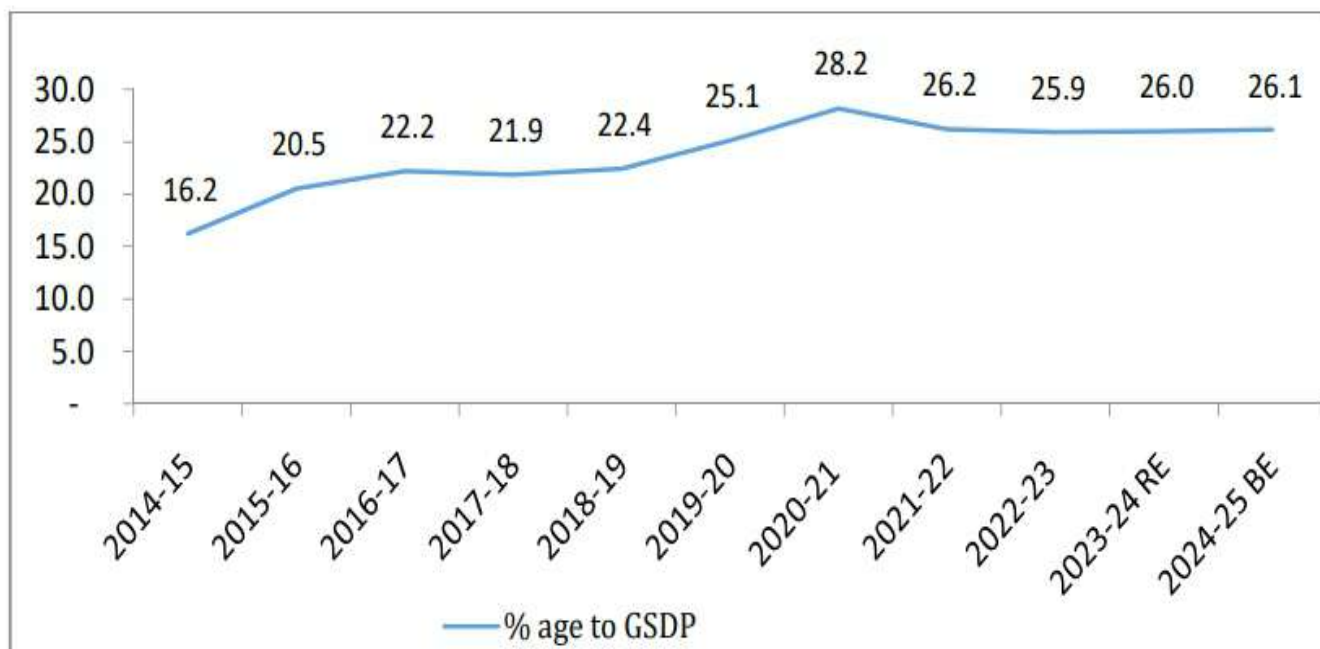


Graph 6: Trend in State Debt Liability

(Source: Finance Department, Haryana. "BUDGET 2024-25.")

<https://cdnbbsr.s3waas.gov.in/s386e78499eeb33fb9cac16b7555b50767/uploads/2024/02/20240223851992219.pdf>

Trend in State Debt Liability to GSDP (%)



Graph 7: Trending State Debt Liability to GSDP

(Source: Finance Department, Haryana. "BUDGET 2024-25.")

<https://cdnbbsr.s3waas.gov.in/s386e78499eeb33fb9cac16b7555b50767/uploads/2024/02/20240223851992219.pdf>

Final Ranking of States for 2022-23

| States | FHI Score | Rank 2022-23 | Quality of Expenditure | Revenue Mobilisation | Fiscal Prudence | Debt Index | Debt Sustainability |
|----------------|-----------|--------------|------------------------|----------------------|-----------------|------------|---------------------|
| Odisha | 67.8 | 1 | 52.0 | 69.9 | 54.0 | 99.0 | 64.0 |
| Chhattisgarh | 55.2 | 2 | 55.1 | 56.5 | 56.0 | 79.6 | 29.0 |
| Goa | 53.6 | 3 | 45.5 | 87.1 | 59.4 | 51.0 | 25.2 |
| Jharkhand | 51.6 | 4 | 47.3 | 45.7 | 62.4 | 66.9 | 35.7 |
| Gujarat | 50.5 | 5 | 40.0 | 48.7 | 52.7 | 69.0 | 42.0 |
| Maharashtra | 50.3 | 6 | 37.1 | 59.1 | 41.8 | 76.4 | 36.8 |
| Uttar Pradesh | 45.9 | 7 | 45.8 | 34.6 | 44.7 | 59.9 | 44.5 |
| Telangana | 43.6 | 8 | 36.9 | 75.2 | 40.8 | 53.3 | 11.7 |
| Madhya Pradesh | 42.2 | 9 | 59.7 | 27.6 | 35.6 | 61.0 | 27.2 |
| Karnataka | 40.8 | 10 | 47.4 | 43.9 | 43.9 | 62.2 | 6.7 |
| Tamil Nadu | 29.2 | 11 | 32.0 | 41.2 | 25.8 | 36.0 | 11.1 |
| Rajasthan | 28.6 | 12 | 38.3 | 35.4 | 19.9 | 32.3 | 16.8 |
| Bihar | 27.8 | 13 | 56.1 | 5.3 | 11.5 | 47.2 | 18.8 |
| Haryana | 27.4 | 14 | 24.8 | 47.8 | 26.1 | 24.1 | 14.3 |
| Kerala | 25.4 | 15 | 4.2 | 54.2 | 34.0 | 23.1 | 11.3 |
| West Bengal | 21.8 | 16 | 32.3 | 12.4 | 25.4 | 18.3 | 20.6 |
| Andhra Pradesh | 20.9 | 17 | 31.4 | 22.1 | 13.3 | 37.8 | 0.0 |
| Punjab | 10.7 | 18 | 4.7 | 28.1 | 5.6 | 0.0 | 15.2 |

Table 1: Fiscal Ranking of States
(Source: Fiscal Health Index 2025, NITI Aayog)

Factors Influencing the Issue

Stable governance and regulatory frameworks foster trust in financial institutions. Robust GDP growth and sound fiscal policies support capital inflows and investment opportunities. Technological advancements drive innovation and streamline processes, but require adaptation to emerging cybersecurity risks. Strong regulatory frameworks ensure transparency and accountability, strengthening the financial system's resilience against systemic threats.

Impacts of the Issue

Direct Impact

- Increased economic stability and investor confidence, fostering sustainable growth
- Reduction of systemic risk and financial vulnerabilities, safeguarding overall economic stability
- Enhanced access to financial services across diverse demographics and regions
- Improved public finance management and fiscal sustainability
- Greater transparency and accountability in financial transactions

Indirect Impact

- Improved access to credit and capital for businesses and individuals
- Increased competition among financial institutions, leading to better quality of services
- Enhanced consumer and investor trust, creating conditions for long-term savings and investment
- Promotion of foreign investment inflows and economic development
- Enhanced investor confidence in the state's commitment to sustainability

Global Learnings

Global Best Practice

Green Bond Principles (GBP): The Green Bond Principles by the International Capital Market Association (ICMA) offer globally accepted voluntary guidelines to ensure transparency and integrity in green bond issuance. They emphasise clear use of proceeds, project evaluation, management, and reporting. Widely adopted, the GBP standardises green financing practices, fostering credibility and growth in the global green bond market³⁷.

Disruptive Technologies - Palm Payment in China: The Body as a Wallet

In a remarkable leap toward biometric innovation, China has introduced palm-based payment systems, allowing individuals to make purchases simply by swiping their palm. This cutting-edge technology uses unique vein patterns in a person's hand to verify identity and authorise transactions—eliminating the need for physical cards, smartphones, or even wearables.

Piloted at popular locations like Tencent's cafeteria and now expanding to metro stations and retail outlets, this form of biometric authentication offers unmatched convenience and speed. The palm scan, which takes just a second, is linked to the user's WeChat Pay account, streamlining the entire payment process.

While this advancement raises valid concerns around data privacy and surveillance, it also marks a significant shift in the way financial transactions are conducted. As biometric payments gain traction, they could redefine the future of fintech by integrating identity and access into a single, seamless gesture—literally putting payment power in the palm of your hand.³⁸

Possible Pathways

Short-Term Pathway (2030)

Strengthen Fiscal Transparency:

- Review off-budget borrowings of Public Sector Undertakings (PSUs)
- Establish GST oversight committee to address tax irregularities
- Reform Integrated Financial Management System

Long-Term Pathway (2047)

Institute Long-Term Fiscal Frameworks:

- Create Medium Term Debt Strategy distinct from fiscal policy
- Establish Fiscal Stabilisation Fund for containing economic volatility
- Develop advanced financial forecasting capabilities

Short-Term Pathway (2030)

Empower Local Government Finance

- Implement Own Source Revenue (OSR) augmentation reforms for PRIs and Urban Local Bodies (ULBs)
- Enhance accounting and auditing reforms
- Prevent idle parking of State funds with "Just-in-Time" releases

Enhance Financial Inclusion

- Leverage the State Rural Livelihood Mission (SRLM) to reduce disparities by facilitating access to financial services and sustainable livelihood opportunities.
- Partner with civil society organisations (CSOs) to boost financial literacy in backward districts
- Enhance international collaboration on financial regulations

Implement Proactive Risk Management

- Conduct periodic stress tests and scenario analyses
- Identify and mitigate potential financial stability risks
- Develop early warning systems for financial vulnerabilities and conduct stress tests for macroeconomic vulnerabilities so as to assess the resilience of the financial systems to various shocks

Long-Term Pathway (2047)

Build Sustainable Local Finance Systems

- Strengthen institutional capacity of local governments
- Implement comprehensive revenue generation reforms
- Develop advanced expenditure management systems

Create Comprehensive Financial Ecosystem

- Evaluate impact of financial inclusion programmes
- Support sustainable economic growth mechanisms
- Maintain long-term stability through diversified instruments like green bonds, public-private partnerships, etc
- Explore the development of a state-level financial innovation hub in Haryana, drawing from models like Gujarat's GIFT City and international best practices from Singapore, Hong Kong, and Shanghai, to attract investment, foster fintech growth, and build institutional capacity in financial services

Achieve Financial Resilience

- Deploy advanced systems for anticipating financial risks
- Create adaptive frameworks for new financial challenges by integrating foresight, agile policy-making, robust institutions, and technological adoption
- Build countercyclical financial buffers

ISSUE 2: GREEN FINANCING/INNOVATIVE FINANCING FOR GREEN ECONOMY

In its latest budget, Haryana Government has increased funding for the Energy sector and the Environment and Forest Department, signalling a strong commitment to green financing and sustainable development. While this focus on renewables and conservation is commendable, challenges persist. Effective fund utilisation demands robust oversight and capacity-building. Despite higher allocations, more investment is needed to fully address environmental issues. Striking the right balance between budget priorities and securing additional funding is essential to maximise the impact of green initiatives and ensure long-term sustainability.

Current Status

- ✔ INR 7,195 crore allocated for assistance to public sector and other undertakings in the energy sector (2023- 24)³⁹
- ✔ Total expenditure on new and renewable energy sources: 4.34% (2022-23)⁴⁰
- ✔ Government enhanced "green" budget by approximately 38.67% (2023-24)⁴¹
- ✔ Honourable Chief Minister announced INR 654.36 crore for Environment and Forest Department projects (2023-24)⁴²

Factors Influencing the Issue

International climate agreements like the Paris Accord are driving supportive policies for green finance. Recognition of financial risks from environmental degradation is spurring demand for sustainable investments. Growing public awareness about environmental sustainability is influencing consumer behaviour and investment preferences, creating market demand for green financial products. Financial technology advancements are enabling innovative mechanisms such as blockchain-based carbon trading platforms. Environmental regulations and ESG integration into investment decisions are reshaping the green finance landscape, driven by the urgent need to transition toward a low-carbon economy.

Impacts of the Issue

Direct Impact

- Accelerated deployment of renewable energy and sustainable infrastructure
- Establishment of a highly resilient and sustainable energy system, ensuring reliable access to affordable, clean energy
- Improved environmental quality through reduced pollution and conservation efforts
- Enhanced climate resilience of physical infrastructure and natural systems
- Creation of new green jobs and economic growth opportunities in sustainable industries

Indirect Impact

- Stimulate technological innovation and adoption across sectors
- Improved public health through reduced pollution and better environmental quality
- Alleviate energy poverty and raise living standards, especially in rural and underserved areas
- Boost climate resilience and reduce vulnerability to environmental disasters

Global Learnings

Global Best Practice

OSFI Guideline E-21: Operational Risk and Resilience Framework: Canada's OSFI (Office of the Superintendent of Financial Institutions)

Disruptive Technologies - AI and Blockchain Innovations Driving Sustainable Finance

AI is becoming increasingly vital in guiding sustainable investment strategies, complementing traditional analysis and supporting informed

Guideline E-21 sets a robust framework for Federally Regulated Financial Institutions to manage operational risks and build resilience against disruptions like cyber incidents, pandemics, and third-party failures. It mandates governance-led Operational Risk Management Frameworks (ORMFs), disruption tolerances, and scenario testing. Integrated with related guidelines on tech and third-party risk, it promotes a systemic, cross-functional approach to operational continuity.⁴³

decision-making. Natural-language processing tools and AI-enabled analysis of IoT data help investors identify and verify climate-related investments and risks. Innovative solutions streamline data access and standardisation, enabling efficient navigation of the complex ESG landscape. Blockchain-based digital twins of real-world assets linked to climate data facilitate precise reporting of financed emissions to regulators, mitigating greenwashing risks and allowing banks to access lower borrowing costs through sustainability-linked bonds.⁴⁴

Possible Pathways

Short-Term Pathway (2030)

Establish Policy Framework for Green Financing

- Develop Climate/Environment strategy with Green Taxonomy
- Incorporate climate budgeting in finance rules
- Implement mandatory third-party audits for green projects
- Integrate the 'Haryana Green Cluster Scheme' into the green taxonomy, providing financial incentives for MSMEs adopting sustainable practices
- Incorporate the 'Haryana Industrial Equipment Re-use & Scrappage Scheme' within green financing frameworks to support circular economy initiatives.
- Align the 'Haryana EV for Cargo Logistics Scheme' with green financing policies to promote electric vehicle adoption among MSMEs
- Develop and implement climate risk insurance mechanisms for MSMEs as part of the updated MSME Policy 2019 to mitigate financial shocks from climate-related events

Long-Term Pathway (2047)

Mainstream Climate Finance Across Government

- Establish Climate Budget Cells in all departments
- Ensure specialised expertise in climate/green financing
- Scale up ESG reporting quality to all PSUs in Haryana
- Expand the reach and impact of the 'Haryana Green Cluster Scheme', 'Haryana Industrial Equipment Re-use & Scrappage Scheme', and 'Haryana EV for Cargo Logistics Scheme' to cover a wider array of MSMEs across all sectors
- Ensure the updated MSME Policy, with its focus on climate risk insurance, is fully integrated into the financial planning and support systems for all MSMEs

Ensure Comprehensive Financial Governance

- Ensure all PRIs and ULBs follow good accounting practices
- Timely submission of audited statements
- Implement standardised reporting across local governments

Short-Term Pathway (2030)

Strengthen ESG Reporting & Accountability

- Review ESG reports of PSUs
- Conduct capacity-building training on ESG with Securities and Exchange Board of India (SEBI) and Reserve Bank of India (RBI)
- Improve the quality of ESG reports for key departments

Enable Local Green Finance Mechanisms

- Build the capacity of PRIs and ULBs on green budgeting
- Establish credit ratings for municipal bonds
- Help selected Local Self Governments (LSGs) mobilise finances through green bonds

Implement Digital Financial Monitoring

- Develop Digital Public Financial Management Systems
- Operationalise real-time monitoring of climate finance flows
- Create transparency in expenditure management

Long-Term Pathway (2047)

Scale Green Finance Ecosystem

- Enable more PRIs and ULBs to mobilise green finance
- Expand green municipal bond programmes
- Foster innovation in green finance through R&D, including exploring specific green loan products or bonds tailored for MSMEs adopting sustainable technologies
- Unlock new sources of climate finance, particularly dedicated Green Funds, to scale up climate action in Haryana. By implementing investor-friendly policies, strengthening public-private partnerships, and aligning state-led projects with global sustainability standards, Haryana can attract long-term capital for renewable energy, climate-resilient infrastructure, and adaptation initiatives
- Promote the 'Safety Compliance Scheme' as a key component of green finance, recognising its role in reducing risks and improving environmental health and long-term sustainability
- Expand the 'Support for Obtaining Fire Insurance Policy (Under Haryana Textile Policy)' to other susceptible MSME sectors, integrating it into broader climate risk mitigation and green finance initiatives

Achieve Full Digital Integration

- Scale up digital platforms across all local governments
- Implement advanced analytics for financial monitoring
- Create an integrated financial management ecosystem

ISSUE 3: SAFETY & SECURITY

(Internal Security, Women's Security, Prediction of Futuristic Crime Patterns, Data Security & Privacy, including Cybersecurity Measures)

Ensuring safety and security, particularly for vulnerable groups like women and children, remains a top priority for Haryana. The state has made significant strides through innovative initiatives, with its extensive police force and specialised units continuing to strengthen public safety. Haryana Police has demonstrated remarkable adaptability by proactively embracing technology, successfully implementing the CCTNS and leveraging AI to combat fraud. Building upon these achievements, the state is well-positioned to further enhance its security framework through continued investment in predictive crime analysis, advanced data security measures, and strategic policing efforts. These forward-looking approaches will further elevate Haryana's commitment to ensure the safety and well-being of all citizens as it progresses toward its vision for 2047.

Current Status

Overall Crime Statistics

- Total IPC crimes: 1,25,435 (2022), with a crime rate of 426.3 per lakh population⁴⁵
- Sanctioned strength of police force: 74,699 (2022), with 195 police personnel per lakh population⁴⁶
- Law enforcement infrastructure: 28 Cyber Crime Police Stations, 298 Police Stations, 27 Traffic Police Stations, 33 Women Police Stations, and 150 Police Posts (2022)⁴⁷
- Cybercrime incidents surged from 224 cases in 2015⁴⁸ to 681 in 2022, with an incidence rate of 2.5 per lakh population⁴⁹

Crime against Women & Children

- Crime rate against women per lakh population in Haryana in 2023: 110.3, with charge sheeting rate at 57.2%⁵⁰
- Haryana reported 234 cases of Dowry Deaths in 2022 (rate 1.7), higher than India's rate of 1.0 per lakh women.⁵¹
- 17 cases reported in 2022 under the Dowry Prohibition Act 1961.⁵²
- Haryana's incidence rate for cruelty by husband or his relatives stands at 41.7, double the national average of 20.9, with 5,883 cases being reported in 2022 for 5,887 victims.⁵³
- Of 31,516 cases of sexual harassment in the country in 2022, 916 were reported in Haryana as per NCRB.⁵⁴
- Haryana recorded 1,787 cases of rape (rate 12.7), almost three times India's rate of 4.7. The most affected age group was 18–30 years, with 1,094 victims, followed by 30–45 years with 628 victims.⁵⁵
- 3109 female victims of kidnapping and abduction with the most affected age group in Haryana being 16–18 years, with 1,435 cases, followed by 12–16 years with 1,027 cases.⁵⁶
- Violations under the Immoral Traffic Prevention Act 1965 were slightly higher in Haryana at 0.4, compared to India's 0.2.⁵⁷
- Rate of total crime against children (per one lakh of population) increased from 67.3 in 2022⁵⁸ to 70.2 in 2023⁵⁹
- POCSO cases: 2,142 (2023)⁶⁰
- Child Trafficking in Haryana and in India is comparable at 0.1.⁶¹
- 11 cases of foeticide registered with a 0.1 incidence rate.⁶²

(All non-percentage rates are for per lakh population)

Factors Influencing the Issue

Stable governance and effective law enforcement policies are crucial for maintaining internal security and addressing emerging threats. Investment in security infrastructure and technology is essential for combating crime and ensuring public safety. Addressing gender-based violence is imperative for promoting social cohesion and trust in law enforcement. Advancements in predictive analytics and data security measures play a vital role in anticipating future crime patterns while protecting sensitive information from cyber threats. Robust regulatory frameworks are necessary to ensure compliance with data protection laws and strengthen cybersecurity measures.

Impacts of the Issue

Direct Impact

- Decreased crime rates and improved public safety outcomes
- Enhanced trust and confidence in the government's ability to protect citizens
- Strengthened protection of vulnerable populations, particularly women and children
- Improved defence against cybersecurity threats and data breaches
- More effective law enforcement operations through technology integration

Indirect Impact

- Promotion of economic growth by creating a conducive environment for investment and tourism
- Enhanced social cohesion by reducing fear and anxiety among citizens
- Improved public health outcomes through reduction in crime-related injuries and trauma
- Creation of safer learning environments supporting educational attainment
- Development of more resilient communities and stronger civic engagement
- Enhanced investor confidence in the state's commitment to sustainability

Global Learnings

Global Best Practice

NIST Cybersecurity Framework – United States: The NIST Cybersecurity Framework, structured around five core functions—Identify, Protect, Detect, Respond, and Recover—serves as a global benchmark for managing cybersecurity risks. Widely adopted by U.S. industries and globally referenced, it enhances resilience against cyber threats, with organisations like JP Morgan Chase integrating it to strengthen digital defences.⁶³

Disruptive Technologies - Nation-State Cyber Warfare: Redefining the Digital Threat Landscape

The emergence of nation-state actors in cyber warfare and espionage has introduced a new dimension to the digital threat landscape. Countries worldwide are heavily investing in developing sophisticated cyber capabilities, resulting in state-sponsored hacking groups orchestrating some of the most prominent attacks in recent memory. These attacks not only pose significant threats to cybersecurity but also carry profound geopolitical implications and blur traditional boundaries between conventional and



cyber warfare, challenging existing defence frameworks. As nation-states continue to leverage cyberspace for strategic advantage, addressing this evolving threat demands enhanced international cooperation, robust cybersecurity measures, and innovative defence strategies.⁶⁴

Possible Pathways

Short-Term Pathway (2030)

Develop Community-Based Security Networks

- Launch targeted public safety awareness campaigns, strengthening community policing and expanding women's safety initiatives, including an increase in dedicated 'Mahila Thanas'.
- Organise cybercrime awareness campaigns at community and school levels via workshops and hackathons for early vigilance
- Conduct mandatory gender sensitivity training for Panchayat members to empower them in addressing grassroots-level issues and promoting equitable safety within local communities

Implement Data-Driven Policing

- Develop AI-driven crime prediction tools and unified data-sharing systems for law enforcement
- Utilise AI and data analytics to identify crime patterns and vulnerable areas specifically affecting marginalised populations, enabling targeted preventative measures

Strengthen Security Infrastructure

- Invest in advanced CCTV and AI-powered monitoring, enhancing data-sharing between law enforcement agencies and improving real-time intelligence gathering

Long-Term Pathway (2047)

Create Self-Sustaining Security Systems

- Implement crime reduction mentorship programmes, support rehabilitation for at-risk individuals, and build strong law enforcement-community collaborations
- Establish dedicated community liaison units focused on building trust and addressing the unique safety concerns of senior citizens, children, persons with disabilities, and the Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual and Others (LGBTQIA+) population

Deploy Predictive Security Systems

- Implement comprehensive real-time monitoring, create integrated threat prevention platforms, and develop automated security response protocols
- Integrate advanced AI and behavioural analytics to predict and prevent crimes targeting vulnerable groups, ensuring proactive protection and rapid response

Establish a Comprehensive Security Framework

- Deploy integrated security networks across sectors, implement self-healing security infrastructure, and create multi-layered defense mechanisms

Short-Term Pathway (2030)

- Ensure public spaces and infrastructure are designed with the safety needs of children, senior citizens, and persons with disabilities in mind, leveraging smart city technologies for enhanced surveillance

Strengthening Correctional Administration and Prisoner Rehabilitation

- Correctional Administration and Prisoner Welfare to mandate policies for reducing prison overcrowding through non-custodial alternatives and ensuring humane treatment and rehabilitation for inmates

Long-Term Pathway (2047)

- Enact and rigorously enforce policies for inclusive public safety, ensuring all security initiatives and technological deployments explicitly protect the rights and safety of children, senior citizens, persons with disabilities, and the LGBTQIA+ community as foundational elements

ISSUE 4: PARTNERSHIPS WITH DEVELOPING COUNTRIES

Haryana's strategic location within the NCR, intersected by major expressways and rail connections, positions it as a key player in fostering partnerships with developing countries. This geographical advantage, combined with substantial FDI inflows from October 2019 to December 2023, underscores the state's appeal as a favourable destination for international business and investment. Haryana's unwavering commitment to global economic engagement is exemplified by its active participation in international trade and exports to countries like Morocco in FY 2020-21. By leveraging its connectivity and financial prowess, Haryana aims to deepen partnerships with developing nations to facilitate economic exchange, knowledge sharing, and capacity building. These collaborations create opportunities for mutual benefit while contributing to sustainable development both within Haryana and partner countries. Through stronger ties with developing nations, Haryana seeks to harness shared expertise and resources to drive inclusive growth and prosperity on a global scale.

Current Status

- ✓ 9.12 billion USD FDI inflows, with the Services sector being a major contributor (October 2019 to December 2023)⁶⁵
- ✓ Haryana's export to Morocco in FY 2020-21 was USD 9.44 million (INR 69.75 crore)⁶⁶

Factors Influencing the Issue

Diplomatic relations and foreign policy priorities shape the scope and nature of partnerships, with government initiatives and bilateral agreements facilitating collaboration. Trade dynamics and investment opportunities drive partnerships, with developing countries offering potential markets, investment capital, and development assistance. Cultural exchanges and people-to-people connections foster goodwill and cooperation, enhancing the foundation for collaborative initiatives. Technological advancements and innovation play a crucial role in

enabling knowledge transfer, capacity building, and joint research projects. Legally, regulatory frameworks and international agreements govern partnership terms and conditions, ensuring compliance and accountability.

Impacts of the Issue

| Direct Impact | Indirect Impact |
|--|--|
| <ul style="list-style-type: none"> • Increased access to financial resources, technology, and expertise for economic development • Enhanced infrastructure development through collaborative projects • Improved security capabilities through cooperative arrangements • Expanded market access for local businesses and products • Strengthened institutional capacity through knowledge exchange | <ul style="list-style-type: none"> • Stimulation of job creation, entrepreneurship, and economic diversification • Fostering of innovation, research, and technological advancement • Promotion of cultural exchange, mutual understanding, and social cohesion • Enhancement of diplomatic relations and regional stability |

Global Learnings

Global Best Practice

The Global Partnership for Effective Development Co-operation (GPEDC) is a multi-stakeholder platform uniting governments, development agencies, civil society, and the private sector to enhance the impact of development cooperation. It promotes transparency, accountability, and results-driven partnerships to ensure inclusive and effective development outcomes across all forms of cooperation.⁶⁷

Disruptive Technologies - Empowering Development through Technology Transfer

Technology transfer serves as a vital conduit, granting developing countries access to cutting-edge knowledge, research, and expertise from across the globe. This access acts as a catalyst for upgrading technological capabilities, fueling innovation, and ensuring that industries can compete internationally. By facilitating the exchange of ideas and expertise, technology transfer empowers developing nations to harness the latest advancements in various fields, from healthcare to renewable energy and beyond. As a result, these countries can leverage innovation to address local challenges, drive economic growth, and enhance their standing in the global marketplace. Ultimately, technology transfer stands as a cornerstone in the pursuit of equitable development and shared prosperity worldwide.⁶⁸

Possible Pathways

Short-Term Pathway (2030)

Establish Strategic Collaboration Frameworks

- Launch targeted pilot initiatives in key sectors
- Organise joint workshops to identify shared priorities
- Implement joint R&D projects in priority areas

Create Exchange & Knowledge Transfer Systems

- Facilitate structured exchange programmes
- Establish city/district twinning arrangements
- Develop collaborative knowledge exchange agreements

Implement Trade & Business Collaboration

- Organise trade missions and business forums
- Create joint business incubation challenges
- Establish platforms for cross-border entrepreneurship
- Encourage investments and collaborations in sectors that promote sustainable development and create inclusive employment opportunities

Formalise Partnership Frameworks

- Set up bilateral research teams
- Establish shared innovation labs
- Apply for co-financed grants

Long-Term Pathway (2047)

Build Institutional Partnership Ecosystems

- Foster long-term agreements between institutions
- Develop reciprocal fellowships and exchange programs
- Create technical exchange residencies
- Create a Strategic Bilateral Cooperation Cell (SBCC) within FCD to formalise MoUs, track cross-border initiatives, and promote sectoral collaboration

Develop Integrated Development Networks

- Collaborate on large-scale infrastructure projects
- Co-design transportation and energy networks
- Pool resources for climate-resilient construction

Establish Sustainable Economic Alliances

- Create joint investment funds for innovation
- Target emerging sectors with high-growth potential
- Organise cross-border startup accelerators
- Ensure the alliances contribute to diversified, resilient economies and foster equitable prosperity for everyone involved
- Facilitating targeted outbound investments by leading Haryanvi entrepreneurs to boost exports from the state and support the global expansion of Haryana's MSMEs into emerging international markets, thereby positioning Haryana as a competitive economic powerhouse by 2047

Institutionalise Global Collaboration

- Create permanent collaboration mechanisms
- Develop self-sustaining partnership models
- Build integrated long-term research initiatives

ISSUE 5: DISASTER PREPAREDNESS

Disaster preparedness in Haryana is a paramount concern, given the state's vulnerability to natural calamities such as floods and seismic activities. The state's flood manual identifies 102 vulnerable points requiring special attention during monsoon seasons, with extensive flood-prone areas covering 23.50 lakh hectares. Haryana's location within seismic zones IV, III, and II further underscores the risk of earthquakes. To address these challenges, the 1st Battalion of the Indian Reserve Battalion (IRB) serves as the Nodal Agency for Disaster Management. A significant number of police personnel have undergone specialised training in Crisis-Specific Search and Rescue (CSSR)/Medical First Response (MFR), Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Response, and Flood Rescue Operations. While these efforts demonstrate proactive measures toward emergency preparedness, continued investment in infrastructure resilience, community engagement, and sustainable land management practices remain essential for enhancing the state's overall disaster resilience and protecting lives and livelihoods.

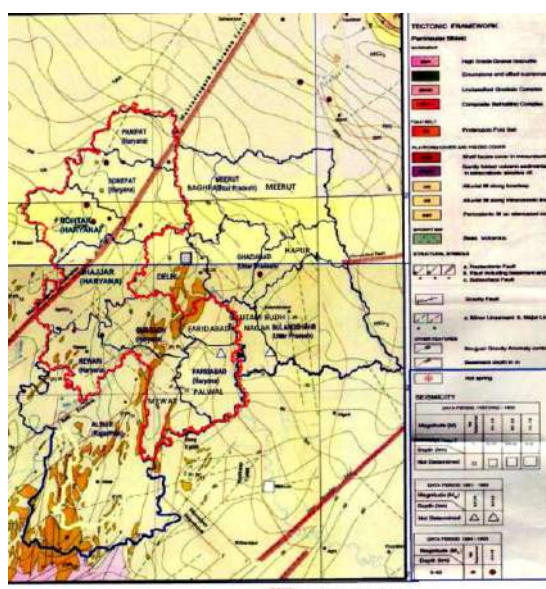


Figure 1: Seismic Tectonic Features in Haryana Sub-Region
(Source: Sub-Regional Plan for Haryana Sub-Region of NCR-2021, Town and Country Planning Department, Haryana)

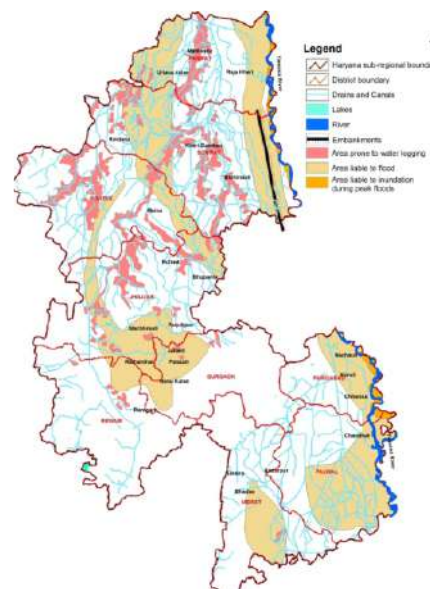


Figure 2: Flood Prone Areas in Haryana Sub-Region
(Source: Sub-Regional Plan for Haryana Sub-Region of NCR-2021, Town and Country Planning Department, Haryana)

| Districts of Sub-Region | Earth quack hazard | Flood Hazard | Drought hazard | Fire hazard | Chemical and Industrial | Other types |
|-------------------------|--------------------|--------------|----------------|-------------|-------------------------|-------------|
| Faridabad | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ |
| Palwal | ✗ | ✗ | ✗ | ✓ | ✗ | ✓ |
| Panipat | ✗ | ✓ | ✗ | ✓ | ✓ | ✓ |
| Gurgaon | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mewat | ✗ | ✓ | ✗ | ✓ | ✗ | ✓ |
| Rohtak | ✗ | ✓ | ✓ | ✓ | ✗ | ✓ |
| Sonipat | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ |
| Rewari | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Jhajjar | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ |

Table 2: Analysis of Disaster Management Preparedness in the Haryana Sub-Region
(Source: Sub-Regional Plan for Haryana Sub-Region of NCR-2021, Town and Country Planning Department, Haryana)

Current Status

- ✔ Flood-prone area in Haryana: 23.50 lakh hectares (according to Rashtriya Barh Ayog assessment)⁶⁹
- ✔ 102 vulnerable points identified in Haryana's flood manual requiring special attention during monsoon⁷⁰
- ✔ Haryana falls in seismic zones IV, III, & II, making the region vulnerable to earthquakes⁷¹
- ✔ 1st Battalion IRB designated as the Nodal Agency for Disaster Management in Haryana State⁷²
- ✔ 241 police personnel trained in CSSR/MFR, 70 in CBRNE, and 74 in Flood Rescue, deployed across various companies of 1st IRB throughout the state⁷³

Factors Influencing the Issue

Stable governance and effective policymaking are essential for developing and implementing comprehensive disaster management strategies and regulations. Adequate funding and investment in infrastructure resilience and risk reduction measures are crucial for mitigating disaster impacts on the economy and livelihoods. Community engagement, awareness, and participation in disaster preparedness and response efforts play a vital role in enhancing resilience and reducing vulnerability. Technological advancements, including early warning systems and communication networks, are critical for improving disaster forecasting, response coordination, and public alert mechanisms. Sustainable land management practices and ecosystem conservation are vital for reducing environmental degradation and enhancing resilience to natural hazards.

Impacts of the Issue

| Direct Impact | Indirect Impact |
|---|---|
| <ul style="list-style-type: none"> • Reduced loss of life and injury during disaster events through improved preparedness • Reduced property damage and infrastructure destruction from natural calamities • Enhanced emergency response capabilities and resource deployment efficiency • Improved coordination among disaster management agencies and stakeholders • Protection of critical infrastructure and essential services during emergencies | <ul style="list-style-type: none"> • Increased community resilience and adaptive capacity to future disaster threats • Reduced economic losses and faster recovery from disaster events • Preservation of livelihoods and agricultural productivity in disaster-prone areas • Improved public confidence in government's disaster management capabilities • Enhanced regional stability through better management of disaster-induced displacement |

Global Learnings

Global Best Practice

Philippines' Project NOAH: Project NOAH (Nationwide Operational Assessment of Hazard) is the Philippines' flagship, tech-driven disaster risk reduction programme, offering 6-hour lead

Disruptive Technologies - AI-Powered Early Warning Systems: Revolutionising Disaster Prediction

AI and ML are revolutionising disaster management by enabling advanced, real-time predictions. By analysing data from sources like satellite imagery, weather patterns, seismic

time warnings and enhanced hazard mapping through scientific tools. Managed by the University of the Philippines, it integrates efforts across 21 institutions, including private and media sectors. Its comprehensive, multi-component approach has improved disaster preparedness and serves as a global model for climate-vulnerable regions.⁷⁴

sensors, and social media, these technologies detect early warning signs and subtle anomalies that humans might miss. This leads to more accurate forecasts of events like floods and earthquakes, extending warning times and improving evacuation and preparedness. With each disaster, AI systems learn and improve, enhancing future predictions. Integrated with alert systems and mobile tech, they ensure rapid warnings, potentially saving lives and reducing economic losses.⁷⁵

Possible Pathways

Short-Term Pathway (2030)

Strengthen Early Warning Systems

- Implement advanced forecasting technologies
- Develop multi-channel alert systems
- Ensure last-mile connectivity for warnings. Set up District Emergency Operations Centre in every district
- Set up Haryana's Flood Warning System model, in line with the Integrated Flood Warning System (IFLOWS), Mumbai and Chennai Flood Warning System (CFLOWS) for advanced flood forecasting and planning
- Implement efficient mechanisms to test earthquake resilience of structures

Enhance Response Capacity

- Expand specialised disaster response training
- Procure modern search and rescue equipment
- Establish district-level emergency operation centres

Develop Community Engagement Programmes

- Train community volunteers in disaster response
- Conduct regular mock drills in high-risk areas
- Create community disaster management committees
- Leverage traditional disaster management techniques, local food preservation and storage

Long-Term Pathway (2047)

Build Comprehensive Disaster Resilience Culture

- Integrate disaster education into school curricula
- Create centres of excellence for disaster research
- Deploy sensor networks for continuous monitoring

Create Self-Sustaining Community Resilience

- Build capacity for independent disaster management
- Develop decentralised resource management systems
- Create community-owned emergency infrastructure

Design Disaster-Proof Infrastructure

- Implement next-generation building technologies
- Create resilient and decentralised utility systems
- Develop self-healing infrastructure components

Establish Regional Cooperation Frameworks

- Develop cross-border disaster management protocols
- Create platforms for joint exercises
- Implement international knowledge-sharing initiatives

Short-Term Pathway (2030)

- practices, and launch a state-wide IEC (Information, Education, and Communication) campaign to promote grassroots resilience and awareness

Implement Risk Reduction Planning

- Integrate disaster resilience in development planning
- Enforce building codes in seismic zones
- Implement land-use planning for vulnerable areas

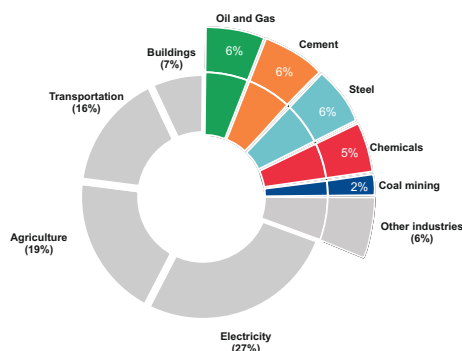
ISSUE 6: MANAGING SUCCESSFUL TRANSITIONS OF TRADITIONAL AND OLD TECHNOLOGY INDUSTRIES, MANUFACTURING, AND SERVICES TO MODERN AND FUTURE-PROOF SECTORS PURSUING NET-ZERO EMISSIONS GOAL

Managing the just transition of industries, manufacturing, and services sectors towards achieving net-zero emissions by 2050 requires strategic and coordinated efforts. Key heavy industries such as cement and concrete, iron and steel, oil and gas, chemicals, and coal mining, accounting for 80% of industrial emissions, must undergo substantial transformation by 2030 to align with this objective. Additionally, the increasing demand for crucial elements like aluminium, steel, and minerals essential for renewable energy infrastructure underscores the urgency for transition. India's ambitious renewable energy targets and the projected creation of green jobs highlight the potential for sustainable growth. Prime Minister Narendra Modi's commitment to achieving net-zero emissions by 2070, along with the introduction of a "net-zero emissions" bill in the Indian Parliament, signifies a crucial step towards fostering a green economy. The challenge lies in ensuring this transition prioritises economic prosperity, environmental sustainability, and social equity, particularly for communities and workers in carbon-intensive sectors who may face significant disruption.

Current Status

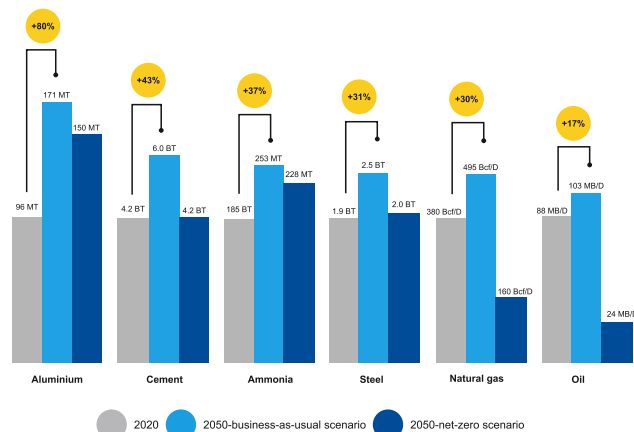
- ✔ Major emission reduction is urgent in five heavy industries - cement/concrete, iron/steel, oil/gas, chemicals, and coal mining, which account for 80% of industrial emissions and must transform by 2030 to maintain the feasibility of 2050 net-zero targets⁷⁶
- ✔ Critical metals and minerals needed for renewable infrastructure will see dramatic demand increases (steel +30%, cement/ammonia +40%, aluminium +80%) over the next three decades. India's renewable capacity is set to double by 2028, becoming the world's third-largest market⁷⁷
- ✔ The ILO projects 54 million green jobs in India by 2030, with the Skills Council for Green Jobs estimating 30-35 million green sector jobs by 2047⁷⁸
- ✔ India announced a 2070 net-zero target at COP26 (2021) and submitted its first Low-Carbon Development Strategy at COP27, followed by a "Net-Zero Emissions" Bill introduced in Parliament (December 2022)⁷⁹

5 heavy industries represent 80% of industrial emissions



Notes: Oil and gas also includes refining. Steel includes iron. Cement includes concrete

Graph 8: Emissions by Sector vs Global Emissions (51 GtCO₂e)
(Source: World Economic Forum)



Notes: *Based on IEA Stated Policies Scenario (STEPS) for all except aluminium; International Aluminium Institute (AI) Business-as-Usual scenario and cement (Global Cement and Concrete Association (GCCA) Business-as-Usual scenario); Based on IEA Net-Zero 2050 scenario for all except aluminium; AI 2060 Net-Zero scenario; *Demand for aluminium based on 2010 data; Ammonia demand does not include ammonia as an energy carrier; Bcf/D: billion cubic feet per day; BT: billion tonnes; MB/D: million barrels per day; MT: metric tonne

Graph 9: Global Demand Projections by Industry 2050
(Source: World Economic Forum)

Factors Influencing the Issue

Supportive government policies and regulations are essential to incentivise and facilitate the transition while ensuring social equity and justice. Investing in green technologies and sustainable practices can drive innovation and competitiveness, albeit with potential short-term costs. Engaging with affected communities and workers to address concerns about job losses and retraining opportunities is crucial for fostering acceptance and support for the transition. Advancements in renewable energy, carbon capture, and sustainable practices offer opportunities for decarbonisation but may require significant investment and infrastructure upgrades. Clear frameworks and standards are needed to guide the transition and ensure compliance with environmental regulations. Mitigating climate change impacts and reducing carbon emissions are paramount, requiring ambitious targets and collective action.

Impacts of the Issue

Direct Impact

- Significant reduction in greenhouse gas emissions and air pollution from industrial operations
- Creation of new green jobs across renewable energy, sustainable manufacturing, and circular economy sectors
- Transformation of industrial processes and business models toward sustainable practices
- Development of new clean technology markets and supply chains
- Enhanced energy security through diversification of energy sources

Indirect Impact

- Improved public health outcomes from reduced pollution and cleaner production processes
- Economic restructuring in regions historically dependent on carbon-intensive industries
- Shifting workforce requirements necessitate new skills and training programmes
- Increased competitiveness in global markets, emphasising upon low-carbon products
- Development of more sustainable urban and industrial environments
- Potential redistribution of economic opportunities across regions and communities

Global Learnings

Global Best Practice

Germany's Ruhr Region: From Coal Mining Hub to Green Industry Centre : Germany's Ruhr region showcases a successful industrial transition from coal mining to green industry through long-term strategic planning, starting with the 1968 Ruhr Development Programme. Despite major job losses, inclusive stakeholder engagement, trade union collaboration, and service sector growth enabled economic recovery. The shift reflects how worker support and environmental remediation can drive a just, net-zero transition.⁸⁰

Disruptive Technologies - Green Hydrogen: Transforming Industrial Decarbonisation

India's National Green Hydrogen Mission (INR 19,744 crore allocation) targets 5 million tonnes of annual production by 2030, with costs projected to fall from USD 5-6/kg to under USD 2/kg. In Haryana, Jindal Stainless has committed INR 1,800 crore to transition its Hisar facility to hydrogen by 2028, targeting 50% emissions reduction. The state's strategic location positions it as a key industrial hub, with its Electric Vehicle Policy now including hydrogen vehicle development and three refueling stations planned along the Delhi-Chandigarh highway. This aligns with national efforts like GAIL's 4.3 tonnes/day green hydrogen plant in Madhya Pradesh and ArcelorMittal Nippon Steel's pioneering green steel facility in Gujarat, which promise 80% carbon reduction compared to conventional methods.⁸¹

Possible Pathways

Short-Term Pathway (2030)

Launch Industrial Efficiency Programmes

- Provide technical assistance and energy audits
- Support the implementation of the best available technologies
- Establish energy performance standards

Develop Green Skills Programmes

- Assess workforce needs in emerging green sectors
- Create specialised training with industry partners
- Establish reskilling initiatives for carbon-intensive sectors

Long-Term Pathway (2047)

Create Comprehensive Carbon Management

- Develop integrated carbon capture networks
- Establish carbon utilisation hubs
- Implement geological storage infrastructure

Build Resilient Green Industrial Ecosystems

- Design industrial systems with climate adaptation
- Develop fully circular material flows
- Create regenerative business models

Achieve Renewable Energy Integration

- Implement smart energy systems for industry
- Develop large-scale seasonal energy storage
- Create intelligent demand response capabilities

Short-Term Pathway (2030)

Implement Clean Technology Pilots

- Support green hydrogen demonstration projects
- Deploy carbon capture pilots at industrial facilities
- Establish circular economy models for waste streams

BIG ACTIONS

1. Trillion NEXT Haryana

A forward-looking plan to guide Haryana toward a trillion dollar plus economy by 2047, harnessing performance-linked budgeting, crowd-sourced innovation, and public-private infrastructure investments for inclusive, long-term financial stability. As part of this vision, each district will develop its own 'District High-Growth Action Plan', leveraging local resources and sectoral strengths to drive bottom-up economic expansion and ensure a balanced, resilient statewide transformation.

2. Cyber Fort 2047

Haryana will deploy a cutting-edge safety network combining AI surveillance, rapid-response systems, and community-led vigilance. This next-gen security grid will safeguard families, women, and the workforce round-the-clock in every district.

3. Quantum Ledger Alliance

A visionary initiative where Haryana invests in next-generation blockchain solutions and digital identity frameworks, forging a tamper-proof ledger for land records, supply chains, and financial transactions. By fusing AI-based risk analytics with state-of-the-art cryptographic technology, the government ensures unstoppable trust in public services, opens new avenues for trade, and solidifies Haryana's position as a pioneer in frictionless commerce and finance.

WORKING GROUP - 1

Departments

- 1. Finance Department
- 2. Training Department
- 3. Planning Department
- 4. Home Department
- 5. Swarna Jayanti Haryana Institute for Fiscal Management
- 6. Department of Economic and Statistical Affairs Haryana
- 7. Haryana Police

Timeline

23/08/2023



First meeting

07/08/2024



Second meeting

21/09/2024



Third meeting



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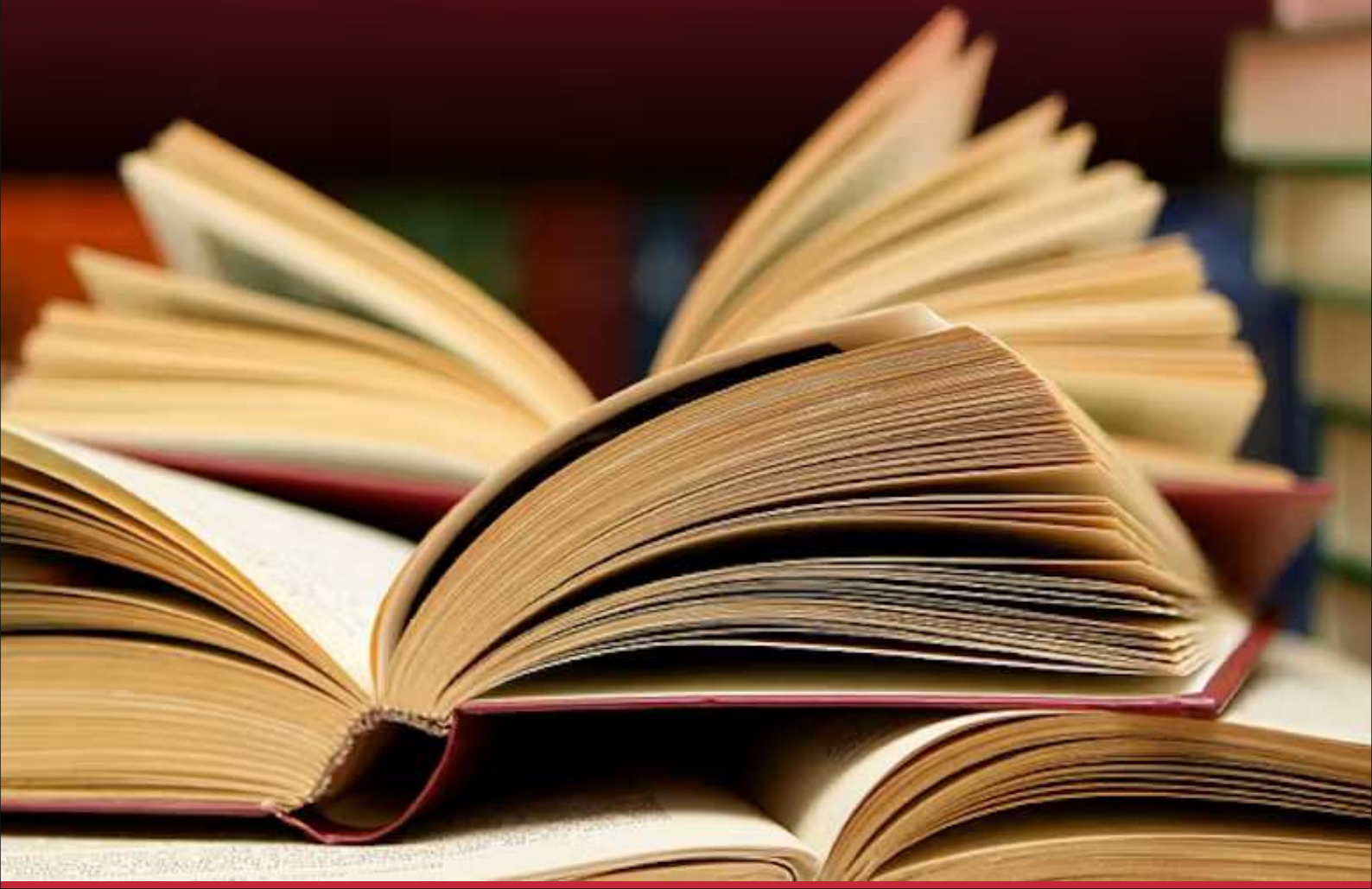
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EDUCATION, SKILLING AND EMPLOYMENT



WHERE ARE WE?

Strengths

- Good Education Access Parameters and School/University/ITI Infrastructure
- Digital Literacy and Internet Penetration
- Excellent MSME Landscape Ensuring Robust Employment Opportunities
- Well-Provisioned Budget and Schemes

Areas of Improvement

- Low Learning Levels
- Higher Dropout Rates at Secondary Level
- Lack of Teacher capacity building Provisions for Integrating New Teaching Methodologies
- Low Female Workforce Participation Rates and Business Ownership
- Youth Employability
- Lack of Provisions of Social Security of Gig and Informal Sector Workers

Opportunities

- Industry Integration with Universities and Skilling System
- Emerging New Future Work and Skill Areas
- Emerging AI and Green Tech Hubs in the State
- Ease-of-Doing Business Improvements

Threats

- Technology Changing the Education Delivery Model
- MSME Modernisation and Transformation
- Unpredictable Global Environment.
- Prevailing Gender Norms

WHERE DO WE WANT TO GO?

VISION



By 2047, to achieve a trillion dollar plus GSDP, Haryana will reorient its education and employment landscape. This includes fostering Future-Focused Education and Skills from early learning, emphasising holistic development, emotional intelligence, critical thinking, creativity, and gender sensitisation. This strategic shift will ensure dignified and secure work for our youth, women, gig and informal sector workers.

MISSION



Transform into a knowledge economy based on a comprehensive **Future-Focused Education and Skills** framework built on three foundational pillars: **Redesign, Reimagine, and Reinvest (RRR)**. This framework will accelerate human capital development while addressing critical gaps to position Haryana as a global exemplar in education-industry integration by 2047.

GOALS

- 100% learning achievements and enrolment
- 45% Female Labour Force Participation Rate (15 years and above)
- 100% Female Literacy Rate
- 95% Employability Rate
- Industry-Institution Collab Index - 85
- 90% MSME International Standards Certification
- 90% MSMEs implementing green processes

A future where the state is a model for educational excellence in India by embracing universal quality education and implementing forward-thinking innovation policies that create sustainable job markets.

The state becomes a hub for AI and green economy that generates diverse employment opportunities across traditional and emerging sectors.

HOW WILL WE REACH THERE?

Uniformity of Quality Education: Upgrade infrastructure, ensure accessibility, inclusivity, enhance teacher recruitment, teacher performance, and in-service training, deploy AI-enabled personalised learning, and align curriculum with global standards while promoting inclusive, data- informed education systems from primary to secondary level, and promote 21st century skills among students as per National Education Policy (NEP) 2020.

Changing Role of Teachers and Skill Providers: Invest in teacher upskilling, promote inclusive hiring, empower innovation through Centres of Excellence, and integrate school education with lifelong learning to adapt teaching roles to evolving education and skilling needs.

Skills and Jobs Mismatch: Establish industry-aligned training through data-driven planning, modernised infrastructure, inclusive skilling, and real-time labour market analysis, while forming multi-stakeholder task forces to bridge current and future skill gaps till 2047.

Entrepreneurship and Employment Challenges: Digitise business processes, identify high-potential sectors, strengthen rural incubators, support marginalised entrepreneurs, and create district innovation zones with targeted funding and mentorship to build an inclusive entrepreneurial ecosystem, and education reforms accordingly.

MSME Modernisation and Green Transition: Support MSMEs in adopting global and green standards through audits, subsidies, certifications, and shared eco-infrastructure while promoting carbon-neutral supply chains and sustainability-focused skill development, and to support such changes through advancement of research at Skill, Vocational and Higher Education Institutions.

Social Security for Gig and Unorganised Workers: Create inclusive social protection through digital registration, policy reforms, targeted benefits, tech-enabled service delivery, and explore universal basic income, ensuring long-term security and dignity for informal and gig workers.

3 BIG ACTIONS

01 **Teach-to-Transform 2.0**

02 **Future Skills Programme**

03 **Project Infinity**

INTRODUCTION

Haryana has established a strong educational foundation with 23,494 schools (private and government-managed) serving 5.7 million students and 59 universities supporting higher education aspirations.¹ The state has made notable progress in infrastructure development and enrolment rates, demonstrating a commitment to educational advancement. Significant investments in school facilities and digital infrastructure have expanded access to learning opportunities across the state. Haryana is at the forefront of implementing NEP-2020, focusing on school education reforms to boost quality, equity, and future readiness. The state's holistic strategy integrates physical literacy and sports. Moreover, it leverages its rich cultural heritage to instill core values, preserve traditional skills, and foster local entrepreneurship. The state's formidable sporting culture consistently produces a remarkable number of athletes excelling across disciplines, from wrestling and boxing to athletics and shooting, bringing immense laurels to both Haryana and the nation. This dedication to physical excellence contributes to a resilient and capable youth population, notably reflected in the selection of 2,893 Agniveers from the state in 2023-24². There remains significant potential to further leverage sports as a core element of education and skill development across all levels, fostering talent and providing structured pathways for these aspiring sportsperson.

Despite these achievements, Haryana faces substantial challenges, including persistent skill-job mismatches that leave graduates unprepared for industry demands. Stark gender disparities in workforce participation, uneven quality of education between urban and rural regions, and inadequate social security frameworks for the growing gig economy and unorganised sector workers. MSME adaptation to emerging technologies remains a major issue to be tackled. Addressing these challenges is critical to ensuring inclusive growth and building a resilient, future-ready workforce in Haryana.

WHERE ARE WE?

Current Status

School Education

a. Education

- Total schools: 23,494³
- Student enrolment (pre-primary to class 12): 57.69 lakhs⁴
- Pupil-Teacher Ratio: Foundational (11), Preparatory (13), Middle (17), Secondary (15) (UDISE 2024-25)
- GER (2023-24): Foundational (Pre-Primary to Class II) - 45.4, Preparatory (Class III to Class V) - 96.5, Middle (Class VI to Class VIII) - 102.5, Secondary (Class IX to XII) - 81 (UDISE 2024-25)
- Dropout rates at secondary level: 4.9% (2023-24)⁵

b. Higher Education

- Universities: 59⁶
- Colleges: 1209⁷
- GER in higher education: Increased from 27.8 (2012-13)⁸ to 33.3 (2021-22)⁹

Infrastructure & Inclusion

- Schools with functional Children with Special Needs (CwSN) friendly toilets (All Management): 51.6%¹⁰

- Schools with ramps for CwSN: 75.2%¹¹
- Schools with internet facilities: 78.9%¹²
- Rural literacy: 81.3% (compared to urban: 90.5%)¹³
- Female rural literacy: 76.7% (compared to male rural: 90.6%)¹⁴

Skilling¹⁵

a. Training Infrastructure

- Government ITIs: 152 co-ed, 36 for women
- Government-aided ITIs: 7
- Private ITIs: 195

Employment

a. Employment Indicators

- Labour Force Participation Rate for age group 15 years and above: Males (72.7%), Females (24.2%)¹⁶
- Unemployment Rate (15 years and above): Rural (3.1%), Urban (4.7%)¹⁷
- Youth employability: 68% according to India Skills Report 2025¹⁸

b. Entrepreneurship Ecosystem

- Ranked 5th in Export Preparedness Index 2022¹⁹
- Classified as "Aspiring Leaders" in States' Startup Ranking 2022²⁰

c. MSME Landscape²¹

- Approximately 18.15 lakh MSMEs operating in Haryana
- Male-owned MSMEs: 8.3 lakhs; Female-owned: 0.98 lakhs

FUTURES TRIANGLE (*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

The Futures Triangle analysis reveals the complex interplay of forces shaping Haryana's educational and employment landscape. The "Weights of the Past" include both foundational policies like the Right to Education Act and persistent challenges such as centralised management and insufficient skill development. "Pushes of the Present" highlights current drivers, including digital connectivity, vocational education initiatives, and emerging technological disruptions that are causing skills-job mismatches. "Pulls of the Future" encompass forward-looking forces such as the implementation of the NEP, green job opportunities, and AI-driven education platforms, alongside concerns about automation-related job displacement. This analysis provides a framework for understanding Haryana's trajectory in education, skilling, and employment sectors.

Pushes of the Present

Positive

Haryana's **NIPUN Mission** demonstrates the state's capacity to implement scalable, data-driven educational reforms that achieve international recognition and measurable improvements in foundational learning outcomes.

Negative

Rapid **technological advancements** are increasing the skills and job mismatch, posing challenges for the workforce.

Positive

New vocational courses, including tourism, have been introduced in 1,400 schools to align skill development with industry demands.

Focus on **quality infrastructure** in government schools to enhance the learning environment and educational outcomes.

Leveraging Haryana's formidable **sporting culture and achievements** to foster holistic youth development, instil discipline, and create diverse career pathways.

Schemes like **Make in India, Startup India and Stand-up India** encourage youth entrepreneurship and generate employment opportunities.

Availability, accessibility, and affordability of **smartphones** and the internet facilitate **digital literacy and connectivity**.

Promotion of **overseas employment** opportunities by the government, widening global prospects.

A new educational framework has been implemented to promote 21st century skills and personalised learning through initiatives like e-Adhigam, a tablet-based learning programme, along with new clubs and the SACH accreditation framework for quality assurance.

A new MIS [Enterprise Resource Planning System (ERP system)] has been implemented to streamline administrative tasks through online workflows, including a paperless portal for private school permissions and automated teacher benefits.

There is a strong focus on continuous professional development to help teachers adopt competency-based learning methods.

Negative

Prevailing **gender norms** discourage women from participating as gig workers, limiting their economic opportunities.

Income inequality persists, even among those with similar skill sets, undermining social cohesion and economic stability.

Lack of a competency-based learning mindset among key stakeholders, as mentioned in NEP 2020.

Reluctance towards entrepreneurship and private sector jobs, with a strong preference for public sector employment, limits risk-taking and stifles private enterprise growth.

Quantitative research output is limited to premier institutes and universities of the country and research funding and industry collaboration is very limited.

Positive

Initiatives were expanded to provide free coaching for competitive exams, including the Super-100 scheme for IIT-JEE/NEET aspirants, Mission Buniyaad for National Talent Search Examination (NTSE) and Kishore Vaigyanik Protsahan Yojana (KVPY) coaching, and a new programme for NDA aspirants.

Student welfare programmes have been introduced, including the Chhatra Parivahan Suraksha Yojana for safe transport, and the SEHAT programme, which provides healthcare and milk-protein bars, along with free sanitary napkins for girl students.

Pulls of the Future

Positive

Effective NEP implementation requires strong political will to emphasise competency- and outcome-based quality education and skill development.

Technological **advancements in e-learning platforms** and AI-driven education enhance the accessibility and effectiveness of learning.

Adoption of **green technology and infrastructure** promotes eco-friendly practices and create new employment opportunities.

Emerging **opportunities in green jobs** and environmental courses directly align with global sustainability trends.

Focus on social redesigning and process redesigning of MSMEs for adapting new technologies fosters innovation and competitiveness.

Adoption of education system which focuses on **critical thinking, problem solving, and application-based learning** to encourage creativity, curiosity and collaboration.

Negative

Concerns regarding AI and automation reducing employment opportunities necessitate re-skilling and up-skilling efforts

Market competitiveness and access to green markets may pose challenges for **smaller businesses** and startups.

Climate-induced migration from traditional occupations to gig economy roles may exacerbate social and economic disparities.

Resistance to the adaptation of new technologies and processes may hinder progress and innovation in various sectors.

The curriculum and pedagogy currently lack alignment with the needs of 21st century learners and the latest technological disruptions.

Weights of the Past

Positive

Implementation of RTE in 2009 ensures access to education for all children.

Efforts to **improve infrastructure in schools**, such as building toilets and drinking water facilities, enhance the learning environment.

The Online Teacher Transfer Policy circumvents the procedural delays and brings in transparency.

The introduction of the **dual system of training** (Industrial Training Institutes - ITIs) provides vocational education opportunities.

Negative

Less emphasis on teacher recruitment, incentive-linked promotion, and training and skill development, affecting the quality of education imparted.

Centralisation of power in the management of government schools leads to programmatic hurdles and inefficiencies.

Limited access to disadvantaged groups in education and employment opportunities perpetuates social inequalities.

Insufficient emphasis on skill development leads to a gap between industry demands and available skills.

Achieving last-mile delivery for schemes requires enhancing accountability mechanisms throughout the governance structure.

Optimising the time commitments of government officials from judicial disputes is essential for accelerating programme implementation.

Traditional exam-oriented and theory-focused rote learning

WHERE DO WE WANT TO GO?

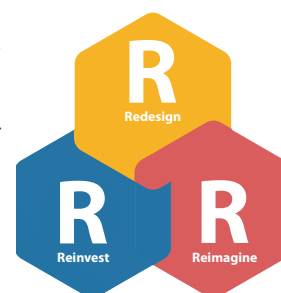
VISION 2047

By 2047, toward achieving a GSDP of trillion dollar plus, Haryana will reorient the current education and employment landscape to prepare the state with Future-Focused Education and Skills, ensuring youth, women, and gig workers enjoy dignified and secure work. Haryana will position itself as a globally competitive knowledge and green economy hub by redesigning the existing models to seamlessly integrate quality education with industry needs, fostering innovation and entrepreneurship.

- **Educational Excellence without Boundaries:** Ensure every Haryanvi citizen accesses world-class education regardless of geography, gender, or socioeconomic status, unleashing human potential at an unprecedented scale.
- **Redefined Learning Facilitation:** Revolutionise teaching from knowledge transmission to inspirational facilitation, nurturing critical thinkers, creators and digital pioneers who shape tomorrow's world.
- **Education-Industry Synergy:** Pioneer a seamless ecosystem where education and industry converge, equipping youth with cutting-edge skills for emerging technologies and green economy leadership.
- **Entrepreneurial Renaissance:** Create India's most vibrant entrepreneurial landscape where innovation thrives through streamlined regulations, accessible financing, and targeted mentorship.
- **MSME Global Leadership:** Transform MSMEs into globally competitive, technology-driven, sustainable enterprises that define new standards of excellence and environmental stewardship.
- **Dignified Work for All:** Pioneer comprehensive social security frameworks ensuring every worker—including those in emerging models—enjoy financial protection, healthcare access, and retirement dignity.
- **Achieve Higher Education Excellence through Targeted Ranking Success:** Set a clear goal for Haryana universities to significantly improve their standing, specifically targeting a minimum of three institutions in the top ranks of the National Institutional Ranking Framework (NIRF) and securing recognition for multiple institutions in prestigious global evaluations like the QS World University Rankings.

STRATEGIC MISSION*: Future-Focused Education and Skills - The RRR Approach

Haryana's transformation into a knowledge economy requires a comprehensive education and workforce strategy built on three foundational pillars: **Redesign, Reimagine, and Reinvest (RRR)**. This framework will accelerate human capital development while addressing critical gaps to position Haryana as a global exemplar in education-industry integration by 2047.



1. REDESIGN: Cultivating Critical Thinking and Practical Skills

The **Redesign** pillar emphasises developing next-generation capabilities through transformed pedagogical approaches and experiential learning methods.

2. REIMAGINE: Transforming Access and Quality for the Future Workforce

The **Reimagine** pillar aligns education with future job markets through technology integration and industry-led training models. By implementing specialised green skill programmes across all secondary schools statewide and expanding the network of sector-specific Centres of Excellence, Haryana will significantly boost Pradhan Mantri Kaushal Vikas Yojana (PMKVY) placement rates within this decade, creating a globally competitive workforce prepared for emerging technological and environmental challenges.

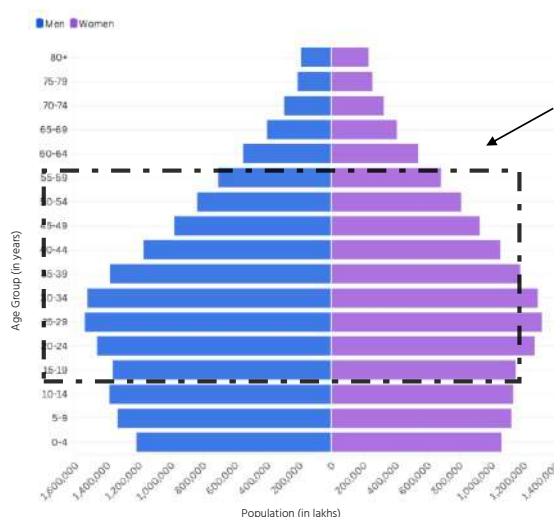
3. REINVEST: Building Infrastructure for Inclusive Growth

The **Reinvest** pillar prioritises strategic investment in educational infrastructure to ensure equitable access across

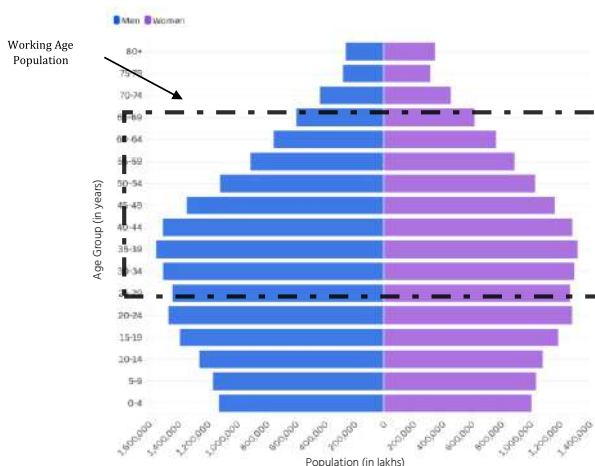
*Aligned Departments: Primary, Secondary, Higher and Technical Education, Skill Development, MSME, Industries, Science and Technology, Employment, Labour, Welfare of SCs/BCs, Social Justice & Empowerment

all demographics and regions. By achieving 100% digital connectivity in schools by 2047, implementing a hub and spoke model at a 1:4 ratio (1 hub school connected to 4 satellite schools), and ensuring complete accessibility for CwSN, Haryana will bridge the rural-urban education divide (current rural literacy: 71.42% vs. urban: 83.14%) and create inclusive learning environments that maximise human potential development throughout the state.²²

STRATEGIC GROWTH ACCELERATORS : Working age population



Graph 10: Haryana Population Projection 2026
(Source: Census of India 2011)



Graph 11: Haryana Population Projection 2036
(Source: Census of India 2011)

GOALS

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|--|-----------------|-------------|-------------|-------------|---|
| Percentage of students in grades 3, 5 and 8 achieving at least minimum proficiency in learning outcomes | Reading Proficiency (Grade 2 level): Class 3 - 32.1% Class 5 - 53.9% Class 8 - 76.6% Arithmetic Class 3 - 33.1% (Subtraction) Class 5 - 29.4% (Division) Class 8 - 43.1% (Division) | ASER 2024 | > 90% | > 91% | > 95% | SDG 4.1: Universal quality education with relevant outcomes by 2030 |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|--------------|---|-------------|-------------|-------------|---|
| Student Teacher Ratio | 22:1 | U-DISE+ 2024-25 | 18:1 | 15:1 | 12:1 | OECD average (15:1); Finland's best practice (10 12:1) |
| Female Literacy Rate | 65.94 (2011) | (2011 Census of India) | 80% | 87% | 100% | SDG Target 4.6; Kerala's model (96% literacy) |
| Digital Literacy Rate | 38.2% | Ministry of Electronics and IT (MeitY) | 80% | 86% | 98% | National Digital Literacy Mission; Estonia's benchmark (96%) |
| Female Labour Force Participation (15 years and above) | 24.2 | PLFS 2023-24 | 32% | 37% | 45% | Based on Haryana's priority sectors growth [National Skill Development Corporation (NSDC Report)] |
| Employability Rate | 68% | India Skills Report 2025 | 80% | 85% | 95% | Based on Haryana's priority sectors growth (NSDC Report) |
| Youth Unemployment Rate (15-29 years) | 10.7% | PLFS 2023-24, Ministry of Statistics and Programme Implementation | 7% | 6% | 4% | Haryana Skill Development Mission targets |
| Industry-Academia Active Partnerships (Per 1,00,000 Students) | 12 | NSDC Haryana Skill Gap Report baseline metrics | 25 | 34 | 50 | NASSCOM's doubling recommendation; benchmarked against Germany, South Korea, Switzerland |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|-------------------|--|-------------|-------------|-------------|---|
| Industry-Institution Collaboration Index | 31.2 | NITI Aayog Skill Development Index | 60 | 69 | 85 | NITI Aayog Vision aligned with South Korea's industry-academy model |
| Gross Enrollment Ratio in higher education | 33.3 (2021-22) | All India Survey on Higher Education (AISHE) 2021-22 Report, Ministry of Education | 38.6 | 42.6 | > 50 | Benchmarked against higher education GER of leading states |
| Total number of patents granted in State | 168 | - | 2,000 | 3,500 | 5,000 | Tamil Nadu and Maharashtra are the leading states in terms of filing for patents in India |
| Percentage of Universities' patents transferred for commercialisation | 0 | - | ≥ 2% | ≥ 5% | ≥ 7% | Benchmarked against the need to establish an aspirational growth trajectory for a localised programme to align with the national vision |
| Percentage of medium and large firms collaborating with universities or research institutions | 0 | - | 5.2% | 10.42% | ≥ 20% | Benchmarked against leading states such as Karnataka, Maharashtra, Telangana and Tamil Nadu |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|----------|---|-------------|-------------|-------------|---|
| No. of higher educational institutions (overall) in top 150 NIRF ranking | 0 | NIRF Ranking, Government of India | 6 | 8 | 10 | Tamil Nadu is home to 18 of NIRF 2024's top 100 institutions, the most of any Indian state |
| QS World University Rankings 2026 | 0 | QS World University Rankings 2026 | 1 | 3 | 5 | Maharashtra has a total of 10 universities listed in the QS World University Rankings 2026 |
| No. of foreign students enrolled in higher education | 2,415 | Department of Higher Education, Government of Haryana | 2,925 | 5,422 | 10,000 | Benchmarked against Karnataka with highest number of foreign students enrolled in higher education as per the AISHE 2021–22 Report, with a total of 6,004 international students enrolled during that academic year |
| Model Sanskriti College: Autonomous Institution as per NEP 2020 | - | - | 20 | 50 | 100 | |

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

- Centralised educational governance structures delay the implementation of critical reforms, hindering progress.
- Existing educational disparities further deepen socioeconomic divides, particularly in underdeveloped regions.
- The widening skills-industry gap continues to stifle innovation and economic growth across sectors.
- Haryana continues its current trajectory with persistent gender inequalities limiting women's economic participation.
- Lack of accountability will inhibit the reach of educational outcomes to the last mile.

NEGATIVE DISRUPTIVE FUTURE (RISKS)

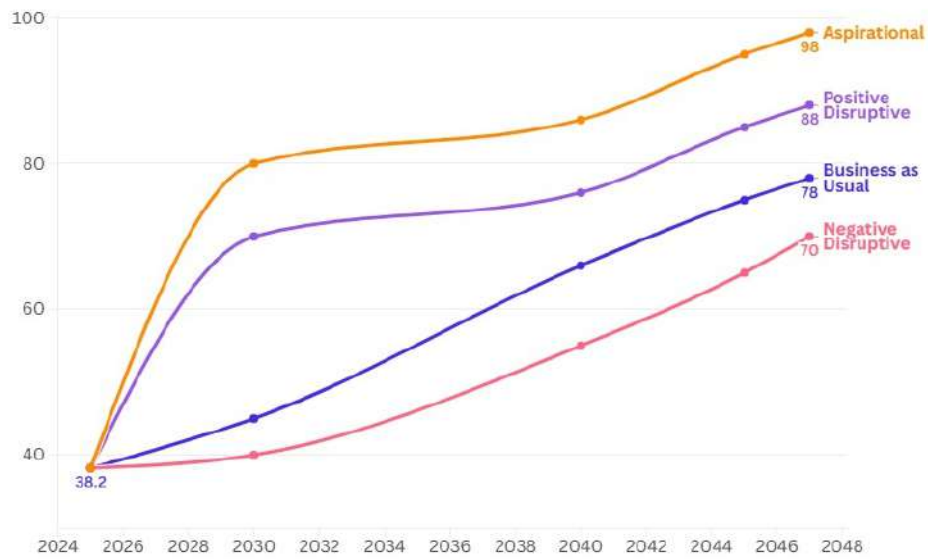
- Continued inadequate teacher accountability and development systems would fundamentally undermine educational quality and outcomes.
- Increasing automation could significantly widen employment gaps, potentially causing economic instability.
- Rapid AI adoption might displace significant portions of the workforce without adequate transition pathways.
- Small businesses could face growing exclusion from environmentally-conscious markets without adaptation support.
- Resistance to technological adoption would severely limit modernisation efforts across educational institutions.

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

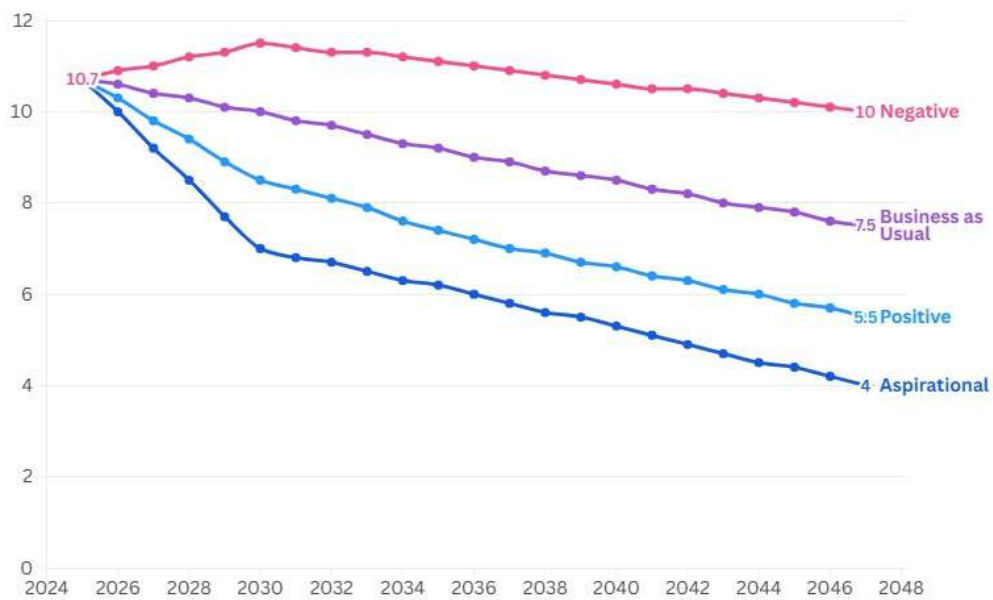
- Haryana will significantly enhance learning outcomes and educational effectiveness.
- By grade 3, 100% of students are able to read grade-appropriate text in alignment with National Curriculum Framework - Foundational Stage (NCF-FS) guidelines
- Comprehensive, inclusive development policies would create substantial educational equity across all regions of the state.
- Haryana would embrace transformative digital literacy initiatives that revolutionise educational access across rural areas.
- Strategic focus on industry-aligned vocational training would effectively bridge employment gaps and enhance workforce readiness.

ASPIRATIONAL FUTURE

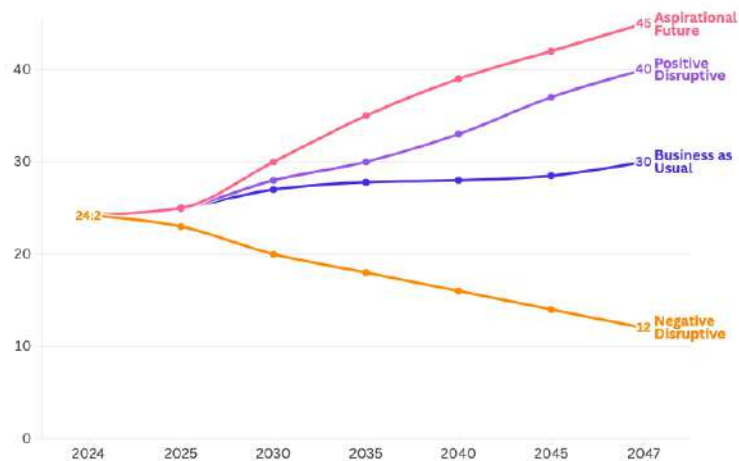
- Universal quality education would power inclusive prosperity, with Haryana becoming a model for educational excellence in India.
- In alignment with NEP-2020, Haryana will serve as a model to inculcate skill-based education to school students that makes them future-ready by the establishment of centres of excellence catering to local traditional expertise.
- Looking to the future, Haryana aspires to implement forward-thinking innovation policies that create sustainable job markets.
- The state envisions a green economy that generates diverse employment opportunities across traditional and emerging sectors.
- Haryana aims to foster technology-enabled MSMEs that drive competitive growth and contribute to economic resilience.
- Universal quality education would power inclusive prosperity, with Haryana becoming a model for educational excellence in India.



Graph 12 (a): Digital Literacy Rate (%)



Graph 12 (b): Youth Unemployment Rate (15-29 years) (%)



Graph 12 (c): Female Labour Force Participation Rate (%)

HOW WILL WE REACH THERE?

To realise our future vision, we must confront significant challenges that could impede our progress. Failure to address these issues could undermine our efforts to establish Haryana as a leading hub for skilled workforce development and economic prosperity. Overcoming hurdles related to skills and job alignment, fostering entrepreneurship, and ensuring educational equality is paramount. Moreover, facilitating MSMEs' transition to new technologies, redefining the role of educators, and enhancing social security for gig workers are essential endeavours.

An equally important step is synergising the efforts of stakeholders by mapping clusters of like-minded entrepreneurial groups across villages, developing new cooperatives, polishing skill sets, infusing business knowledge, and inviting companies to partner with these young Self-Help Groups (SHGs) and cooperatives. This coordinated, multi-departmental effort will help scale these initiatives and nurture self-reliance at the grassroots level.

By addressing these challenges head-on, we can lay the foundation for a vibrant, inclusive, and sustainable future for all residents of Haryana.

Issues

- 🔍 Uniformity of Quality Education
- 🔍 Changing Role of Teachers and Skill Providers
- 🔍 Skills and Jobs Mismatch
- 🔍 Challenges in Entrepreneurship and Employment
- 🔍 Adapting MSMEs to New Technologies, Global Standards, and Green Economy to create more employment opportunities.
- 🔍 Social Security for Gig and Unorganised Workers

ISSUE 1: UNIFORMITY OF QUALITY EDUCATION

Haryana has established a substantial educational infrastructure comprising 23,494 schools serving over 5.3 million students²³. The state maintains a favourable pupil-teacher ratio of 22:1, reflecting its commitment²⁴ to creating effective learning environments across all educational stages. While these encouraging statistics confirm strong progress, they also highlight valuable opportunities to address disparities and work toward achieving uniform quality education across the state.

While Haryana has achieved commendable GER Foundational (Pre-Primary to Class II) - 45.4, Preparatory (Class III to Class V) - 96.5, Middle (Class VI to Class VIII) - 102.5, Secondary (Class IX to XII) - 81, indicating significant student attrition in the transition to secondary education. The dropout rate of 4.9% at the secondary level in 2024-25 underscores persistent challenges in student retention.²⁵ According to the Annual Status of Education Report (ASER) 2023-24, learning outcomes in Haryana show substantial variation across districts, with rural students consistently underperforming compared to their urban counterparts, particularly in mathematics and reading comprehension.

The state has initiated promising interventions, including the introduction of vocational courses aligned with industry demands in 1,293 government secondary and higher secondary schools.²⁶ However, research by the National Council of Educational Research and Training (NCERT) indicates that implementation quality varies significantly, with better-resourced schools showing more effective integration of vocational components. Rural-urban educational divides persist, with rural literacy at 71.42% compared to 83.14% in urban areas. This disparity is more pronounced among females, with rural female literacy at just 76.7% compared to 90.6% for rural males.²⁷

The state of Haryana has made significant strides in implementing NEP-2020 within school education, highlighted by initiatives such as the NIPUN Haryana Mission extending up to Grade 5 to promote competency-based learning, the establishment of Balvatika-III classrooms across all government schools, the creation of Model Sanskriti Schools within a 10 km radius, and the launch of entrepreneurship awards for school students. However, the state continues to face substantial challenges in areas including teacher recruitment, outcome-based incentive structures, teacher professional development policies, administrative accountability, and the establishment of systematic, structured review mechanisms.

Current Status

✔ Collaborative Learning Approaches²⁸

- Primary schools with peer learning programmes: 71.3%
- Upper primary schools with peer learning programmes: 67.1%
- Secondary schools with peer learning programmes: 64.9%
- Higher secondary schools with peer learning programmes: 63.9%

✔ Academic Enrichment²⁹

- Primary schools undertaking academic enrichment activities: 89.66%
- Upper primary schools undertaking academic enrichment activities: 86.85%
- Secondary schools undertaking academic enrichment activities: 81.10%
- Higher secondary schools undertaking academic enrichment activities: 83.14%

✔ Inclusive Infrastructure³⁰

- Schools with functional CwSN friendly toilets (All Management): 51.6%
- Schools with ramps for CwSN: 75.2%
- Schools with ramps having handrails for CwSN: 49.2%

✔ Digital Infrastructure³¹

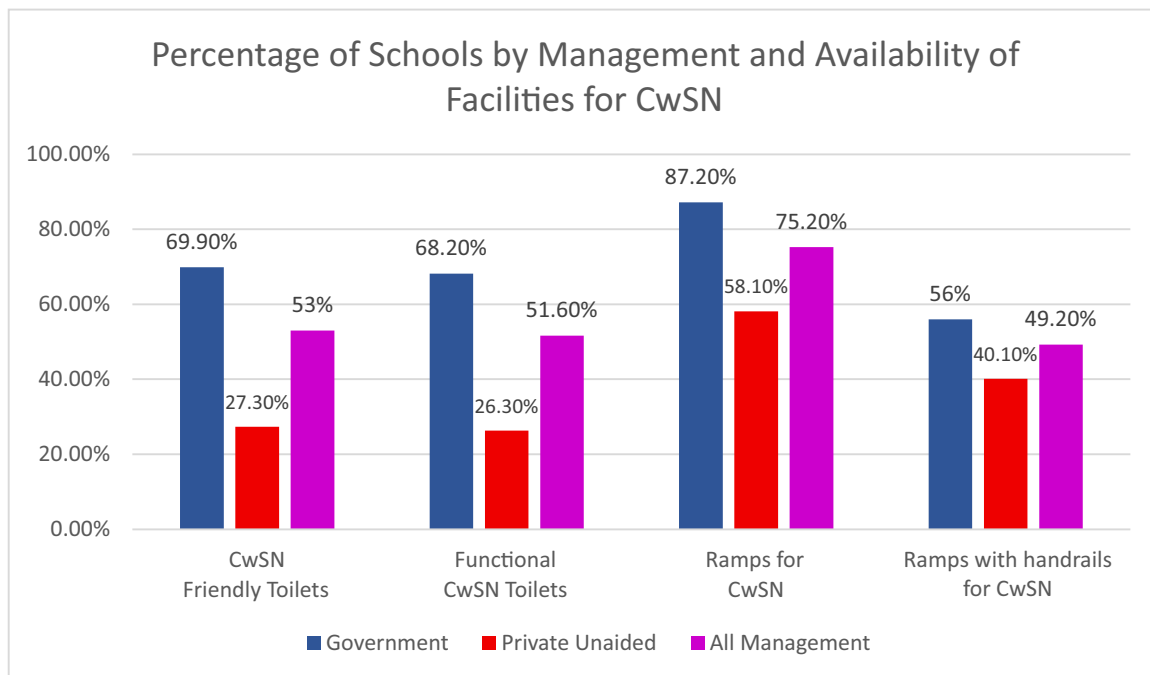
- Schools with internet facilities: 69.3% government schools, 94.5% private schools
- Tablet distribution to students of government schools (Class 10, 11, and 12) to boost e-learning opportunities

✔ Student Progression Metrics³²

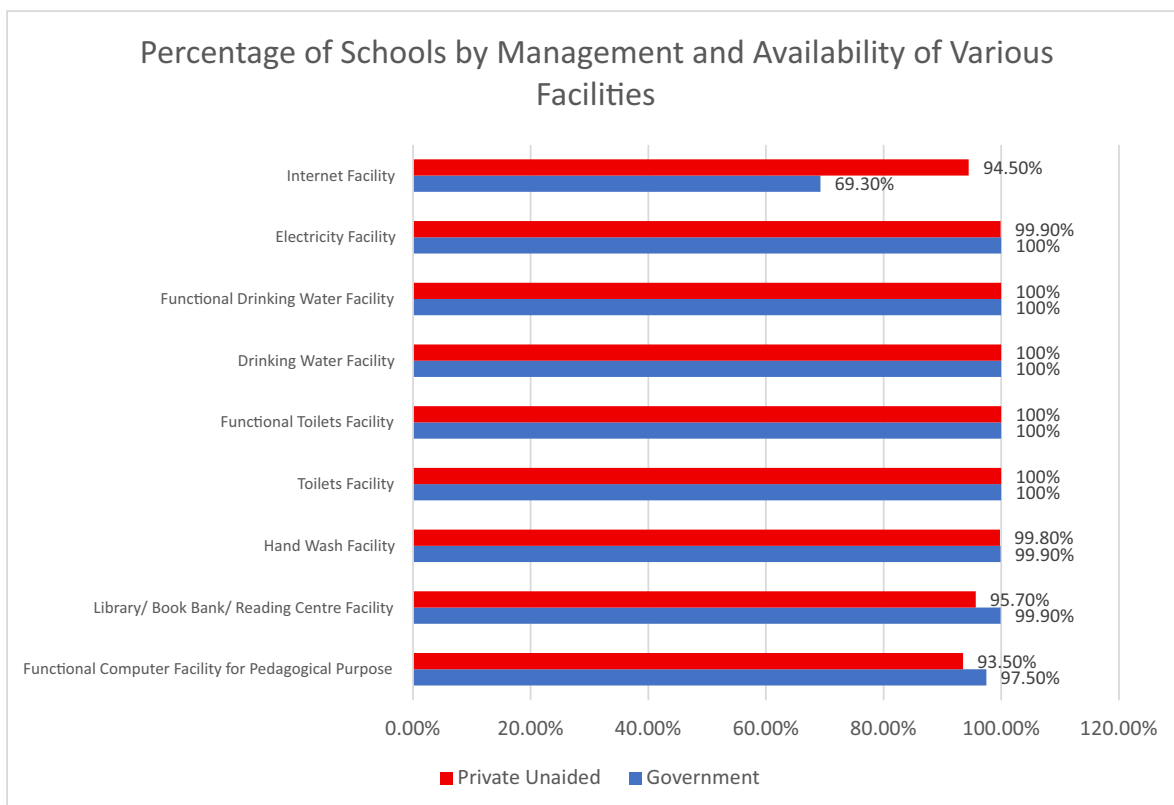
- Dropout rate in secondary schools: 4.9%
- Promotion rates: Primary (100%), Upper primary (99%), Secondary (93%)
- Retention Rate - Foundational (100%), Preparatory (100%), Middle (100%), Secondary (100%)

✔ Vocational Education³³

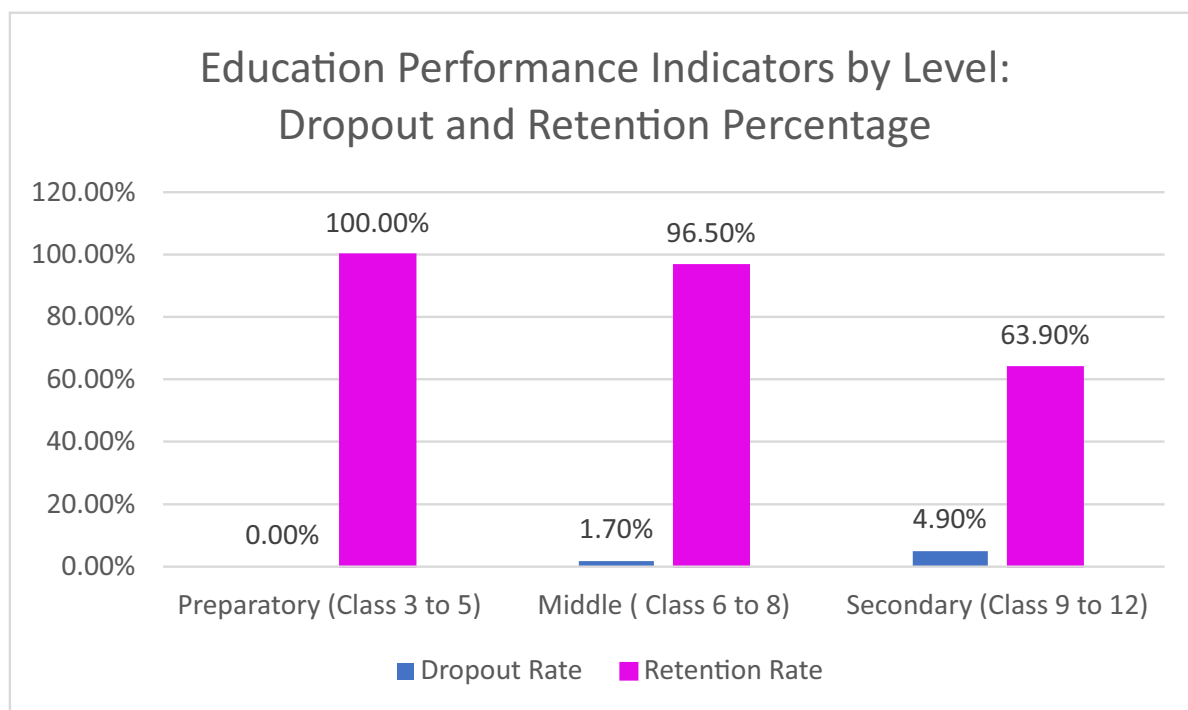
- Haryana has become a leader in National Skills Qualifications Framework (NSQF) implementation, with 1,400 secondary and higher secondary schools now offering 15 vocational courses, including tourism, to integrate skill development from Class 6 onward.



Graph 13: Percentage of Schools by Management and Availability of Facilities for CwSN
(Source: UDISE+ Report 2024-25, Department of School Education & Literacy, Ministry of Education)



Graph 14: Percentage of Schools by Management and Availability of Various Facilities
(Source: UDISE+ Report 2024-25, Department of School Education & Literacy, Ministry of Education)



Graph 15: Education Performance Indicators by Level: Dropout and Retention Rates
(Source: UDISE+ Report 2024-25, Department of School Education & Literacy, Ministry of Education)

While statistics reveal strong infrastructure and promising foundations, critical gaps persist in secondary school retention and the implementation of outcome-based assessment. The substantial investment in physical assets necessitates a pivot from focusing solely on infrastructure availability to ensuring its high-quality and targeted use. This strategic shift will help retain students through secondary school and foster the development of higher-quality graduates for the future.

Factors Influencing the Issue

Multiple interconnected factors contribute to the challenges in achieving uniform quality education in Haryana:

Teacher Quality and Distribution: ASER has consistently highlighted that student learning outcomes in rural Haryana schools with early-career teachers are significantly lower in both mathematics and reading assessment.

Assessment Practices: The ASER 2024 report shows strong foundational gains—with Grade 3 reading (Grade 2 text) jumping from 21.2% to 32.1% and subtraction from 26.1% to 33.1%, and Grade 5 (Grade 2 text) reading at 53.9% and division at 29.4% from 2022 to 2024. The data shows disparities and wide gaps in outcome-based assessment remain.³⁴

Addressing these factors requires a coordinated approach that combines targeted resource allocation, comprehensive teacher development, strengthened implementation support, and community engagement strategies—all focused on equitable access to quality learning opportunities.

Impacts of the Issue

Direct Impact

- Uneven student learning outcomes across regions, school types, and socioeconomic groups, limiting human capital development
- Limited digital literacy and 21st century skills development in schools lacking modern infrastructure and qualified teachers
- Higher dropout rates (4.9% at secondary level) in underresourced schools, particularly affecting marginalised communities³⁵

Indirect Impact

- Perpetuation of social and economic inequalities as educational disparities translates into employment and earning differentials
- Reduced workforce competitiveness in the global knowledge economy, hindering Haryana's economic transformation
- Diminished social mobility and civic engagement, undermining social cohesion and democratic participation

Global Learnings

Global Best Practice

Global education systems are shifting toward competency-based learning, with Finland and Singapore leading through broad frameworks. Estonia and South Korea use formative assessments in 85–90% of schools³⁶. Top systems invest 15-20 days annually in teacher development. Haryana's NIPUN Mission, with its structured approach to foundational literacy and numeracy that has gained recognition from 22 international universities, demonstrates how localised, data-driven educational initiatives can achieve measurable improvements in learning outcomes comparable to global best practices. Effective digital integration emphasises pedagogy over infrastructure. Inclusive models improve outcomes, while quality early education yields 7–10% ROI. Strong school leadership boosts learning by 0.2–0.3 standard deviations, underscoring holistic, data-driven reforms. (Implementations Under the NIPUN Haryana Mission)

Disruptive Technologies - Empowering Education: Customised AI Mentorship

Innovations in AI are revolutionising education by offering personalised mentorship to students, fostering critical thinking, and providing proactive assistance tailored to individual academic journeys. The advent of AI mentors presents a liberating alternative to traditional tutoring, free from the constraints of time. This accessibility empowers teachers with new avenues to enrich student learning, seamlessly integrating academic instruction with personalised support.

Moreover, AI mentorship not only enhances learning but also makes it more captivating and accessible to a diverse range of scholars. By tailoring guidance to each student's unique needs and learning pace, AI mentors ensure that education becomes engaging and inclusive, reaching a wider audience and maximising the potential for academic success.³⁷

Possible Pathways

Short-Term Pathway (2030)

Set Accessibility Standards for Schools

- Develop a rating framework to assess school accessibility, including for CwSN for both availability and quality
- Use ratings to drive infrastructure improvements and policy decisions

Enhancing Faculty Proficiency in Technical and Vocational Education

- Reform recruitment and service rules to attract and retain high-quality faculty
- Implement biannual upskilling programmes focused on pedagogy and domain knowledge
- Establish zonal-level training institutes [on the lines of District Institutes of Educational Training (DIETs)] for continuous professional development of faculty in Technical and Industrial Training Departments
- Address the high vacancy rate of ITI instructors (currently at 50%) by ensuring timely recruitment and promoting effective training delivery
- Train instructors under the Craft Instructor Training Scheme (CITS) to strengthen vocational instruction quality

Strengthen School-to-College Vocational Pathways

- Introduce best practices such as Tamil Nadu's Naan Mudhalvan and Kerala's KASE to improve vocational transition and career readiness
- Promote career counselling programmes in government schools and colleges to guide students in higher education and vocational choices
- Implement the National Credit Framework (NCrF) to enable horizontal and vertical mobility, multiple entry-exit options, and academic equivalence

Expand Super 100 Scheme

- Include students from the Humanities and Commerce streams

Long-Term Pathway (2047)

Align Curriculum with Global Standards

- Upgrade the curriculum to meet international benchmarks
- Focus on science, technology, languages, AI, robotics, financial literacy, socio-emotional learning, analytical skills, etc
- Focus on developing foundational literacy and numeracy skills for primary students

Strengthen Vocational Training Infrastructure

- Include infrastructure development and a phased plan for upgrading ITIs across the state
- Facilitate MoUs with industries to promote demand-based training, drawing from examples like the Tata Steel Foundation's PPP-mode ITI in Jharkhand focused on trades like CNC, E-Vehicle Mechanics, Fitter, and Welder
- Equip ITIs with state-of-the-art infrastructure and practical training models to enhance placement readiness and regional employability, thereby boosting PMKVY placement rates

Make Skilling Aspirational

- Launch initiatives inspired by Odisha's Nutana Unnata Abhiyan (NUA), World Skill Centre, and the Chief Minister Skill Development Fellowship to enhance the skill development ecosystem and elevate its perception among youth

Foster International Collaborations

- Partner with global educational bodies to adopt best pedagogical practices
- Implement proven international strategies to improve learning outcomes

Launch AI-Based Personalised Learning

- Use AI to tailor the curriculum and track individual student progress
- Leverage digital tools for customised, capacity-based learning

Short-Term Pathway (2030)

- Ensure equal access to advanced learning opportunities across disciplines

Upgrade School Infrastructure

- Prioritise facilities in rural schools
- Ensure access to the internet, science labs, and digital tools
- Integrate mobile digital learning vans for rural areas to bridge the digital divide

Strengthen Teacher Training & Mentorship

- Implement a structured teacher recruitment and promotion policy that is linked to academic outcomes
- Pair experienced teachers with new ones for guided mentorship
- Implement regular assessments and track professional development
- Incorporate experiential learning methods into teacher training

Promote Peer Learning Models

- Pilot peer learning programmes based on proven models
- Monitor impact and scale effective practices

Improve Monitoring & Data Systems

- Track school performance, dropout rates, and learning outcomes
- Use data insights to identify and support underperforming schools

Improve Accountability at Multiple Levels

- Create regular, structured review cadence at the state, district and block levels with state and district officials
- Focus on online and offline monitoring of schools

Long-Term Pathway (2047)

Break Social Barriers to Education

- Provide scholarships and incentives to address gender, caste, and location-based disparities
- Promote inclusive education through targeted support programmes

Develop International Knowledge Hubs

- Accelerate Sonapat and nearby areas into a thriving ecosystem of higher education, fostering academic excellence, innovation, and global collaboration, leading to across-state development. Further promote the well-planned integration of educational infrastructure, research facilities, student amenities, and industry connections to create a world-class academic environment

ISSUE 2: CHANGING ROLE OF TEACHERS AND SKILL PROVIDERS

The educational landscape in Haryana is undergoing a profound transformation that fundamentally redefines the role of teachers and skill providers. This evolution transcends traditional knowledge transmission models toward a dynamic ecosystem of learning facilitation, mentorship, and skill development. The NEP 2020 serves as a catalyst for this paradigm shift, emphasising competency-based education that develops critical thinking, creativity, and practical skills alongside academic knowledge.³⁸

Teachers in Haryana are increasingly transitioning from content deliverers to learning architects who design personalised educational experiences responsive to diverse student needs and learning pathways. This transition encompasses several critical dimensions: integration of digital technologies, implementation of multidisciplinary approaches, development of 21st century skills, and provision of inclusive learning environments. Skill providers face parallel evolution demands, with increasing emphasis on industry-education partnerships, practical application, and continuous skill updating responsive to rapidly changing workplace requirements. This necessitates innovative teaching methodologies, authentic assessment approaches, and flexible learning pathways that accommodate diverse learner needs and aspirations. The World Economic Forum's Future of Jobs Report identifies this transformation as essential, with effective educators needing to develop skills in adaptive learning design, technological integration, and collaborative learning facilitation.³⁹

However, Haryana faces significant challenges in enabling this role transformation, including infrastructure limitations, professional development gaps, and institutional resistance to change. Addressing these barriers requires systematic interventions across policy, infrastructure, and capacity development dimensions to empower educators as agents of educational transformation.

Current Status

Haryana's education system demonstrates both strengths and areas requiring development in supporting teacher and skill provider evolution:

- ✔ **System Scale and Structure:** 23,494⁴⁰ schools serving 57.69 lakh students, creating a substantial ecosystem for educational innovation and transformation⁴¹
- ✔ **Teacher Workforce:** 2,63,942 teachers working across the system, with varying levels of preparation for emerging educational approaches⁴²
- ✔ **Student-Teacher Relationship:** Average Pupil-Teacher Ratio (PTR) of 22:1, providing reasonable conditions for personalised learning approaches⁴³
- ✔ **Early Childhood Education Preparation:** 53.4% of male and 40.2% of female teachers at the pre-primary level report adequate training, highlighting foundational stage preparation⁴⁴
- ✔ **Digital Infrastructure:** 98.7% of government schools have functional computer facilities, but only 69.3% have internet access, creating uneven conditions for technology integration⁴⁵
- ✔ **Professional Development:** 56% of teachers participated in structured professional development programmes focused on new pedagogical approaches in the past year⁴⁶
- ✔ **Assessment Capabilities:** 38% of teachers report confidence in implementing competency-based assessment approaches aligned with NEP 2020 objectives⁴⁷
- ✔ **Inclusion Preparation:** 41% of teachers report receiving specialised training for supporting CwSN, despite increasing enrolment of these students across educational levels⁴⁸
- ✔ **Financial Competency Gap:** The evolving educational landscape requires teachers to impart practical financial literacy alongside traditional subjects, yet most educators lack formal training in personal finance concepts, limiting their ability to equip students with essential money management skills critical for future economic self-sufficiency.

These statistics reveal substantial infrastructure and capacity development needs to support teachers and skill providers in effectively fulfilling their evolving roles within Haryana's education system.

Factors Influencing the Issue

- **Digital Transformation:** While 98.7% of government schools have computer facilities, disparities exist in internet connectivity (69.3% government schools vs 94.5% private schools), creating uneven conditions for technology integration and digital pedagogy development⁴⁹
- **Professional Preparation Gaps:** Teacher education programmes demonstrate limited alignment with emerging pedagogical approaches, with 43% of teacher educators reporting high confidence in preparing teachers for competency-based education⁵⁰
- **Assessment System Evolution:** Traditional examination-oriented assessment systems persist despite policy emphasis on holistic evaluation, with 62% of teachers reporting tension between learning outcome objectives and examination preparation pressures⁵¹
- **Pedagogical Preparation Gaps:** Inadequate standardisation of teachers' training courses, particularly at the foundational level, coupled with the absence of a premier Teachers' Training Institute in the state, has created inconsistencies in pedagogical quality and preparedness across Haryana's educational workforce.
- **School Leadership Capacity:** With 39% of school leaders receiving specialised preparation for instructional leadership roles, there is a promising opportunity to expand this training and further strengthen their capacity to support teacher transformation⁵²
- **Continuous Professional Development:** Professional development opportunities remain fragmented and episodic, with 67% of teachers reporting a disconnect between training content and classroom implementation challenges⁵³
- **Incentive Alignment:** Career advancement and recognition systems demonstrate limited alignment with innovative teaching practices, with 71% of teachers perceiving minimal career benefits from pedagogical innovation⁵⁴

Impacts of the Issue

Direct Impact

- Enhancing teaching methodologies and digital competencies among educators can significantly improve the effectiveness of educational delivery.
- Aligning classroom instruction more closely with real-world skill requirements offers great potential to increase educational relevance and boost student engagement.
- Consistent implementation of NEP 2020 principles across all schools presents an opportunity to ensure equitable educational quality and outcomes.

Indirect Impact

- Enhancing graduates' critical thinking, problem-solving, and collaborative skills can better prepare them for success in an evolving economy.
- Strengthening innovation capacity and fostering an entrepreneurial mindset among students can unlock greater potential for economic transformation.
- Advancing educational innovation can help Haryana's workforce remain competitive on a global scale as other regions continue to progress.

Global Learnings

Global Best Practice

International best practices highlight key enablers for teacher and skill provider transformation. Finland's AI-supported adaptive learning boosted personalised instruction among 72% of teachers, improving engagement by 31%. Singapore's peer-led model raised innovation rates by 43%, while Australia's micro-credentialing advanced specialised skills by 58%. Estonia (81%) leads in learning analytics use, Japan shows 29% higher success via co-teaching, and Germany and Denmark exemplify strong industry ties and design thinking in pedagogy.

Estonia's Digital Accelerator Programme: Empowering Teachers for the Digital Age⁵⁵

Estonia's Digital Accelerator Programme redefines teaching by equipping educators with advanced digital skills and peer-led mentorship to foster tech-integrated, personalised learning. Teachers are empowered as digital facilitators and mentors, enhancing student readiness for the digital era. This model positions Estonia at the forefront of transforming education for the 21st century.

Disruptive Technologies - Harnessing Recommender Systems In Education

Innovative uses of recommender systems are transforming various aspects of education, with one notable application involving recommending instructional practices post-assessment, guiding students along tailored learning paths. This becomes particularly significant given the limited practical utility of many end-of-year state exams. Additionally, predictive systems, commonly referred to as early warning systems, play a pivotal role in tracking students at risk of academic underperformance. Leveraging various performance data, including attendance records, these systems predict student success and empower counsellors and faculty to intervene proactively, ultimately fostering student achievement and retention.⁵⁶

Possible Pathways

Short-Term Pathway (2030)

Teacher Training & Upskilling

- Launch programmes aligned with NEP and evolving skill demands
- Focus on emerging technologies, vocational education, and pedagogical trends
- Develop next-generation capabilities through experiential learning

Strengthening Educator Capacity and Industry Linkages

- To enhance the practical relevance of technical education, it is recommended that each University, ITI, and Polytechnic institute host "Industry Chair Professors" seconded directly from the relevant sectors
- Establish a Haryana Teacher University to create master trainers and promote global pedagogy

Short-Term Pathway (2030)

Inclusive Workforce Development

- Ensure gender-balanced hiring in teaching roles
- Conduct dedicated recruitment drives for special educators for CwSN

Data-Driven Skill Development

- Use performance data to identify underperforming districts
- Tailor teacher training interventions based on student performance indicators
- Give digital tools to teachers to track the learning levels of each child and provide customised support that caters to the learning level of each student
- Revamp the B.Ed colleges' curriculum in alignment with NEP-2020
- Increase learning outcome-based assessment implementation

Establish Consistent State and District Review Committees

- Create a structured review mechanism for teachers at the block, district and state levels to hold them accountable for outcome

Industry-Integrated Skill Development

- Establish Industry-Led Curriculum Boards (or Advisory Councils) at all technical institutes and universities for annual curriculum revision, and launch Skill Apprenticeship Councils where industries jointly fund and design specialised courses to address immediate labour shortages
- Introduce "Skill Credits Haryana"—vouchers for workers—to promote continuous up-skilling in high-demand future technologies like AI, EV maintenance, and Agri-tech, based on successful international models
- Mandate a "Green Skills Certification" for all ITI, Polytechnic, and University graduates, focusing training on immediately applicable sustainable practices (e.g., solar, EV repair, water management) while formally linking internships and apprenticeships to the NCrF for full academic recognition
- Accelerate the creation of "Haryana Innovation Corridors" by institutionally linking key knowledge centres (like IIT Delhi–Sonipat extension and AIIMS Jhajjar) with specialised industry parks (IT, biotech, EV) to foster joint research, patents, and start-up creation

Long-Term Pathway (2047)

Strengthen Teacher Autonomy & Innovation

- Involve teachers in curriculum development processes
- Recognise and reward innovative teaching practices through awards and peer-learning platforms
- Develop an incentive-based teacher recruitment and promotion policy

- Partner with Agricultural Universities and Krishi Vigyan Kendras (KVKs) for teacher exposure visits and content co-development on rural livelihoods and agri-innovation

Continuing Education Framework

- Integrate school education with adult skill development to promote lifelong learning and boost employability

Long-Term Pathway (2047)

Sensitivity & Inclusion Training

- Conduct periodic training sessions for educators to foster a diverse, inclusive, and empathetic learning environment

Advanced Training Infrastructure

- Partner with universities to set up Centres of Excellence focused on innovative pedagogy and research
- Establish innovation labs for future-oriented educational methods

ISSUE 3: SKILLS AND JOBS MISMATCH

Haryana has demonstrated strong employability performance, with 68% of its talent pool deemed employable according to the India Skills Report 2025.⁵⁷ While this positions the state firmly among India's top performers in employability, it also highlights an opportunity for Haryana to enhance its standing further and reclaim its leadership in future assessments.

Despite significant investments in skilling initiatives such as the PMKVY, SURYA, and Saksham Yuva Scheme, Haryana faces a growing challenge in aligning its workforce capabilities with rapidly evolving industry requirements. The state demonstrates notable strengths in fundamental skills, including English proficiency (58.25%), numeracy (66.66%), and critical thinking.⁵⁸ However, the employment landscape is increasingly demanding advanced capabilities in analytical thinking, creative problem-solving, and technological proficiency—particularly in emerging fields like AI and big data analytics. This widening gap between existing skills and industry needs threatens to create inefficiencies in Haryana's labour market, potentially constraining economic growth and limiting career advancement opportunities for the state's youth. As industries project a structural transformation in the job market over the next decade, Haryana must address this misalignment to maintain its competitive edge and continue attracting investment.

Current Status⁵⁹

Haryana demonstrates several strengths in its current skilling ecosystem:

- ✔ 86.67% of postgraduates demonstrate exceptional management proficiency
- ✔ 93% of MCA postgraduates excel, highlighting top-tier technical expertise
- ✔ Strong numerical aptitude with 66.66% proficiency, ranking among India's top states
- ✔ Solid English language skills at 58.25%, supporting service sector employability
- ✔ Consistent employability for men at 38.24%, indicating reliable labour market participation
- ✔ High internship engagement with 92.06% of students pursuing professional development opportunities

The state maintains strong appeal as a work destination, especially among male job seekers drawn to its robust industrial base. This positions Haryana favourably compared to other competitive states like Gujarat, Maharashtra, and Andhra Pradesh. The state has an opportunity to enhance its appeal among female workers by strengthening workplace inclusion initiatives, drawing inspiration from states like Andhra Pradesh, Kerala, Delhi, and Tamil Nadu, which have made notable strides in fostering supportive, gender-friendly work environments.

Factors Influencing the Issue

Multiple interconnected factors contribute to Haryana's skills-jobs mismatch:

- **Educational Mis-alignment:** Disconnects between academic curricula and industry requirements limit graduates' job-readiness despite formal qualifications
- **Technological Disruption:** Rapid digital transformation across industries is outpacing the adaptation of training programmes, creating gaps in emerging technical competencies
- **Infrastructure Limitations:** Uneven distribution of quality training facilities across urban and rural areas restricts access to cutting-edge skill development opportunities
- **Awareness Gaps:** Limited understanding among youth about emerging career pathways and corresponding skill requirements affects educational and career choices
- **Gender Disparities:** Lower female workforce participation reflects both social barriers and limited industry inclusion initiatives compared to more gender-progressive states
- **Industry-Academia Collaboration Gap:** Insufficient partnerships between educational institutions and employers for curriculum development, internships, and training delivery

Addressing these factors requires a coordinated approach that aligns Haryana's considerable educational strengths with evolving industry needs while expanding opportunity access across demographic and geographic boundaries.

Impacts of the Issue

Direct Impact

- Enhancing the workforce's technical skills can reduce unemployment and boost industry competitiveness.
- Building appropriate skill sets will improve operational efficiencies, enabling industries to implement new technologies effectively.
- Strengthening talent availability for R&D and process improvement will enhance businesses' innovation capacity.

Indirect Impact

- Investor confidence in Haryana as a business destination could face challenges, which may impact economic growth and capital formation.
- Widening income inequality may arise if skill premiums increase for a limited pool of qualified workers, highlighting the need to broaden opportunities for all.
- Migration of talent and businesses to other regions could pose a potential risk to sustained economic growth.

Global Learnings

Global Best Practice⁶⁰

Global Apprenticeship Network (GAN): GAN is a global coalition advancing youth employability by promoting apprenticeships and work-based learning. Bridging the

Disruptive Technologies - Revolutionising Talent Acquisition with AI-skills Match Engine

The latest advancement in talent acquisition technology comes with the introduction of the AI-skills Match Engine, a groundbreaking feature designed to enhance candidate-job requisition

education-employment gap by aligning practical skills with industry demands, GAN fosters strong business education partnerships, effectively addressing skills mismatches and youth unemployment. The global labour market is rapidly transforming due to technological advances, shifting economies, and evolving work models. Over 85% of organisations now prioritise digital transformation, with big data, cloud computing, and AI projected for adoption by over 75% within five years. Employers foresee a 23% structural job churn by 2027, emphasising skills like analytical thinking, creativity, and AI proficiency. Soft skills—leadership (40%), adaptability (32%), and lifelong learning (30%)—are also gaining importance. Notably, two-thirds of firms expect returns on skill investments within a year. However, these advances coexist with widening employability gaps, affecting less-educated workers and women in developing economies, while wage growth remains constrained amid inflation.

alignment. This innovative tool, seamlessly integrated into the Talent Acquisition suite, aggregates and refines external talent, delivering highly accurate matches between candidates and job requirements. By incorporating the organisation's job architecture using AI, this feature ensures precise alignment. Furthermore, its seamless integration with SAP (Systems, Applications, and Processes) SuccessFactors and other ATSs (Applicant Tracking Systems) enables HR leaders to streamline the process by gathering all job applications in one place, assessing candidates against primary and secondary skill requirements, and validating their skills with AI-driven accuracy.⁶¹

Possible Pathways

Short-Term Pathway (2030)

Establish Multi-Stakeholder Task Forces

- Form state and district-level bodies under Haryana Skill Development Mission (HSDM)
- Include government, industry, and academic experts
- Ensure dynamic policy monitoring & market alignment
- Track job trends, automation impact, and skill needs via the HSDM dashboard
- Identify skill gaps through job market data

Long-Term Pathway (2047)

Ensure Dynamic Policy Monitoring & Market Alignment

- Mandate regular workforce data reporting from industries and MSMEs
- Set up sectoral advisory committees in key industries for policy inputs

Short-Term Pathway (2030)

- **Industry-Led Skill Training Centres (CSR Initiative)**

- Encourage on-site training using industry-grade infrastructure and the latest techniques
- Offer government incentives such as one-time financial support and annual grants for training operations

- **Modernise Training Infrastructure**

- Audit ITIs, polytechnics, and skill centres
- Upgrade curriculum, tools, and faculty
- Ensure alignment with industry standards
- Incorporate transport and accommodation facilities within skill training centres, particularly to improve participation of female students and reduce dropouts. The Tamil Nadu Worker Accommodation model can serve as a reference for designing inclusive, supportive infrastructure

- **Build Strong Industry Linkages**

- Set up sector-specific industry committees
- Engage employers to define real-time skill needs
- Co-develop certified, job-ready training programmes
- Include courses on AI, Fintech, data analysis, green engineering right from secondary schools
- Leverage the model of Vishwakarma University established by the Government of Haryana to align higher education and skill development with evolving industry demands and future job markets
- Inclusion of specialised green skill programmes

- **Ensure Inclusive Skill Development**

- Focus on women, rural youth, and marginalised groups
- Partner with non-government organisations (NGOs), SHGs, and PRIs
- Offer skills in high-growth sectors like digital literacy, healthcare, finance and micro-entrepreneurship

Long-Term Pathway (2047)

- **Develop Specialised Courses and Workforce Readiness Programmes**

- Incorporate dedicated provisions in the New Industrial Policy 2025 for developing specialised courses in coordination with industries, employee workforce readiness programmes, apprenticeship programmes, and entrepreneurship development to address skill gaps. Special focus will be placed on providing additional benefits for women employees, SC/ST/OBC, Agniveer, and Divyang employees of the State

- **Establish "Women in Engineering, Science, and Technology (WEST)" Centre of Excellence in Heavy Engineering**

- Launch a specialised centre for women in engineering
- Collaborate with IITs, NITs, AICTE, and NSDC for curriculum design
- Build a campus with industry-grade labs and workshops
- Develop colleges at par with world universities in humanities, arts, public governance, policy, etc

- **Launch Specialised Skill Hubs & Innovation Centres**

- Offer certification programmes in AI, automation, EVs, green energy, etc
- Host regular expos and industry networking events
- Mainstream Inclusive Skilling across Education & Training

- **Co-develop Inclusive Curricula with National and International bodies**

- Ensure accessible infrastructure (ramps, Braille signs, elevators)
- Use mobile centres, flexible schedules, and free programmes to boost access
- Conduct community outreach and sensitisation drives

Short-Term Pathway (2030)

- Promote training in non-traditional livelihoods to improve employability among women and marginalised populations. Encourage skilling of girls in technology-related and emerging areas to improve outcomes and break occupational stereotypes

Strengthen Labour Market Intelligence

- Deploy a dedicated team to track evolving job trends by utilising employment data, surveys, and industry feedback
- Publish regular reports on emerging skill demands

Deploy Skilled Trainers for Programme Delivery

- Recruit experienced professionals and subject experts and train them in modern pedagogy
- Continuously improve content using trainee and industry feedback
- Establish skill-specific centres for the skills that will be in high demand as per the latest Future of Jobs Report-2025 by the World Economic Forum, skills that include driving, construction, counselling, food processing, etc

Use Data & AI for Workforce Planning

- Design a centralized, AI-powered platform to integrate multiple data sources for real-time analysis and share actionable insights with stakeholders

Offer Capacity Building Incentives

- Provide reimbursement to logistics and warehousing units for technical training costs of workers (operational, frontline, supervisory roles), with a focus on Haryana domiciled workers, as outlined in the Haryana Logistics, Warehousing & Retail Policy 2019

Institutionalising Industry–Academia

Collaboration through Performance Scorecards

- Introduction of Industry-Institution Collaboration Scorecard—link university funding to patents, apprenticeships, internship and joint research. (already initiated)

Long-Term Pathway (2047)

Promote Green Jobs through Industry Incentives

- Launch Green Industry Certification and support eco-friendly practices
- Provide tax incentives and subsidies for green investments
- Partner with institutions for climate-focused training and R&D
- Organise green job fairs and support green industrial parks

ISSUE 4: CHALLENGES IN ENTREPRENEURSHIP AND EMPLOYMENT

Haryana's entrepreneurship and employment landscape presents a mixed picture of progress and persisting challenges. Despite the state's industrial advancement and policy initiatives, fundamental labour market indicators reveal areas needing targeted intervention. According to PLFS 2023-24, Haryana's LFPR stands at 49.5%, lower than India's LFPR of 60.1%.⁶² The gender-wise distribution latest data reveals a stark gap, with LFPR for males at 72.7% and for females at 24.2%, both below the national averages.⁶³ This stark disparity in female labour force participation is among the most pronounced nationally, underscoring a significant untapped economic potential and highlighting the need for focused strategies to enhance women's inclusion in the workforce.

Unemployment remains an area for improvement, with the overall rate at 3.4% across all age groups.⁶⁴ The youth unemployment rate (ages 15-29), at 10.7%.⁶⁵ highlights a significant opportunity to harness Haryana's demographic dividend by addressing labour market challenges faced by the younger population.

Haryana has established a strong foundation for entrepreneurship through policies such as the Entrepreneur and Startup Policy (2017) and the Haryana Enterprises and Employment Policy (2020). The state actively supports entrepreneurs with crucial financial options and resources, including schemes under the Haryana Enterprises & Employment Policy 2020 (Interest Subsidy, Investment Subsidy, Haryana Gramin Udyogik Vikas Yojna, and Collateral-Free Credit Guarantee Scheme) and dovetails Centrally Sponsored Schemes like Pradhan Mantri Formalization of Micro Food Processing Enterprises (PMFME), Prime Minister's Employment Guarantee Programme (PMEGP), and Credit Guarantee Fund Trust for Micro, Small and Medium Enterprises (CGTMSE).

Further demonstrating commitment, the comprehensive Haryana Startup Policy 2022 (revised July 2022) and a dedicated Startup Portal enhance the ecosystem, yielding promising outcomes. The state's innovative initiatives, such as the 'Kushal Business Challenge', inspire youth entrepreneurship by providing seed money and mentorship.

However, structural challenges such as limited access to finance, insufficient mentorship, and implementation gaps persist, especially for women and rural entrepreneurs, highlighting the need for continued focus to ensure inclusive and equitable opportunities and further improve performance metrics. To specifically empower rural women and promote grassroots entrepreneurship, the Deen Dayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM) mobilises SHGs to provide access to credit, skill development, and market linkages for diversified farm and non-farm livelihoods.

Current Status

Labour Force & Employment

- LFPR stands at 49.5% (PLFS 2023-24)⁶⁶
- Unemployment rate across all age groups is 3.4%, rising to 10.7% among youth aged 15-29⁶⁷

✔ **Business Environment & Ease of Doing Business**

- Classified among "Top Achievers" in implementing the Business Reforms Action Plan⁶⁸
- Ranked 5th in the Export Preparedness Index 2022⁶⁹
- Recognised as an "Achiever" among landlocked states in Logistics Ease (LEADS 2024)⁷⁰
- Haryana's share in India's total industrial investment proposal was 1.2% in 2019⁷¹

✔ **Startup Ecosystem**

- Positioned in the "Aspiring Leaders" category in States' Startup Ranking 2022, placing it behind the "Best Performers," "Top Performers," and "Leaders" categories⁷²
- The report states that more than 100 startups received incubation support in 2023-24, with 20 being women-led ventures⁷³
- Approximately 50 startups benefited from formal mentorship programmes⁷⁴
- Haryana is home to over 8,800+ Department for Promotion of Industry and Internal Trade (DPIIT)-recognised startups, ranking Haryana as the 7th largest startup ecosystem in India⁷⁵
- The state nurtures 19 out of India's 117 unicorns⁷⁶
- 45% of the startups in the state are women-led, showcasing a strong commitment to gender equality and inclusive entrepreneurship⁷⁷

✔ **MSME Sector**

- The sector comprises over 1 million (1,069,951) enterprises, contributing significantly to the state's economy⁷⁸
- It generates substantial employment, creating over 6.25 million (6,256,610) jobs⁷⁹
- It accounts for a total turnover of approximately INR 6.48 trillion and total investment of approximately INR 2.58 trillion⁸⁰

✔ **Large Industries**

- 332 large enterprises have generated 188,209 jobs⁸¹

✔ **DAY-NRLM⁸²**

- 59,528 SHGs formed, covering 5,93,212 households
- Revolving Fund (RF) of INR 65.24 Crore provided to 51,891 SHGs
- Community Investment Fund (CIF) of INR 393.93 Crore provided to 32,347 SHGs

The state has established several institutional mechanisms to support entrepreneurship, including the Haryana State Industrial and Infrastructure Development Corporation (HSIIDC) and specialised incentives for MSMEs. The introduction of a dedicated Startup Portal and the comprehensive Haryana Startup Policy 2022, revised in July 2022, specifically signals a commitment to encourage, facilitate, and support the emergence of at least 5,000 new startups in the state during its policy period. These efforts have laid a strong foundation, with promising outcomes. The 'Kushal Business Challenge' scheme – launched under Skill Competition to ignite entrepreneurial spirit in Haryana's youth – represents another innovative initiative in this direction. The winning participants were offered seed money along with coveted mentorship opportunities with leading industry experts.

Looking ahead, the proposed New Industrial Policy 2025 aims to further enhance this ecosystem by incorporating dedicated provisions for developing specialised courses in coordination with industries, conducting employee workforce readiness and apprenticeship programmes, and fostering entrepreneurship development to address

skill shortfalls and mismatches, with a special focus on providing additional benefits for women employees, SC/ST/OBC, Agniveer, and Divyang employees. These clear opportunities exist to further improve ranking and performance metrics to match those of leading Indian states.

Factors Influencing the Issue

Multiple interconnected factors contribute to Haryana's entrepreneurship and employment challenges:

- **Digital Divide:** Uneven digital infrastructure and literacy limit access to emerging opportunities, particularly in rural and semi-urban areas
- **Skill-Industry Alignment:** Haryana demonstrates significant potential in workforce readiness with the highest employable youth concentration nationwide, boasting 76.47% of test-takers scoring above the employability benchmark on assessment tests. Despite this impressive performance in the India Skills Report findings, the state faces challenges in bridging the critical gap between education outcomes and industry requirements, particularly in the emerging technology sector⁸³
- **Regional Disparities:** Development is concentrated in districts adjacent to Delhi-NCR, creating uneven entrepreneurship opportunities across the state
- **Financial Ecosystem Limitations:** Despite policy provisions, the Haryana Centre for Entrepreneurship Development (CED) reports that only 31% of eligible entrepreneurs successfully access institutional finance⁸⁴
- **Gender-Based Constraints:** Cultural and structural barriers contribute to the female LFPR of just 24.2%, significantly constraining the potential entrepreneur pool⁸⁵
- **Policy Implementation Challenges:** Gaps between announced policies and ground-level implementation, with entrepreneurs reporting procedural delays and administrative obstacles
- **Market Linkage Inadequacies:** Limited mechanisms connecting small entrepreneurs to larger value chains and markets beyond local boundaries

Addressing these challenges requires coordinated interventions across policy, education, infrastructure, and social dimensions to create an enabling ecosystem for entrepreneurship and employment growth.

Impacts of the Issue

Direct Impact

- Reduced job creation and economic diversification due to barriers faced by aspiring entrepreneurs and new businesses
- Persistent high youth unemployment (10.7%) leading to underutilisation of human capital and productivity loss
- Limited innovation ecosystem development hampering technological advancement and industry modernisation

Indirect Impact

- Decreased regional competitiveness and diminished ability to attract and retain talent and investment capital
- Social instability and increased migration of skilled youth to other states or urban centres exacerbate regional development imbalances
- Reduced economic resilience with overreliance on traditional sectors and increased vulnerability to market disruptions

Global Learnings

Global Best Practice⁸⁶

Denmark's Holistic Support Model for Entrepreneurship: Denmark's holistic support model fosters entrepreneurship through an integrated ecosystem of training, mentorship, finance, and simplified regulations. By supporting social enterprises like Specialisterne, it promotes inclusive employment while lowering entry barriers. The model tackles access, skill, and regulatory challenges, positioning Denmark as a global benchmark for resilient, inclusive entrepreneurial ecosystems.

Globally, entrepreneurship and employment strategies are shifting toward integrated, inclusive, and innovation-driven models. Entrepreneurial learning is now embedded in school curricula, with UNESCO advocating its introduction from the secondary level. Effective ecosystems rely on robust government-academia-industry partnerships and promote higher female entrepreneurship rates (35-40%). Countries like Singapore and Estonia showcase how digital platforms can expand mentorship and market access. Globally, sustainable enterprise models, localised innovation hubs, and youth-focused entrepreneurship programmes are reducing unemployment. Additionally, microcredit and community lending have proven effective in overcoming financial barriers. These trends highlight the need for a structured, inclusive approach that blends education, infrastructure, and tailored support for marginalised entrepreneurs.

Disruptive Technologies - Unleashing Innovation: The Role of AI in Business Ideation

The question of whether AI can capture or simulate the elusive 'X' factor in business idea creation, that innovative spark, is one that has intrigued many. Can AI truly boost creativity, innovation, and entrepreneurship in unprecedented ways? According to a recent survey of startup founders and creative professionals, it seems AI is indeed becoming a powerful tool in taking business concepts to new heights.

The survey, which encompassed 150 founders and 486 creatives, revealed that a significant 80% of founders have integrated AI into their creative processes. While a majority of them (55%) still prefer human creativity over AI in their startups, technology undeniably plays a crucial role in their growth strategies. Key applications of AI cited by respondents include data analysis to inform creative decisions (42%) and product development to identify and prioritise features or services (25%).⁸⁷

Possible Pathways

Short-Term Pathway (2030)

Digitise Business Registration & Licensing

- Enable complete online registration and licensing for businesses
- Launch a portal with step-by-step guidance on legal, subsidy, and compliance processes

Enhance Digital Literacy

- Improve digital literacy across both rural and urban areas, with a stronger emphasis on rural populations to enable equitable entrepreneurial participation

Identify Key Sectors for Entrepreneurship

- Conduct expert-led studies on high-potential sectors, focusing on trends like AI, IoT, blockchain, and renewable energy, while factoring in regional, environmental, and cultural strengths
- Haryana's GSDP reflects a shift from agriculture to industry and services, but a significant portion of the workforce remains in agriculture. Clear strategies needed to support workforce transition and diversification, such as:
 - Expanding skill training in industrial and service sector clusters.
 - Promoting agro-processing, food-tech, and agri-based enterprises.
 - Enabling rural-urban MSME linkages to absorb surplus farm labour.
 - Introducing vocational education in secondary schools focused on services, digital skills, and emerging technologies.
- Incorporate Strategic Sector Focus (Addressing NITI Aayog Feedback): Leverage Haryana's comprehensive analysis of geographical advantages, skilled workforce, available resources, and manufacturing capabilities to target key industrial sectors for development under the Haryana Enterprises and Employment Policy (HEEP) 2020. These strategic sectors include:

Long-Term Pathway (2047)

Strengthen Industrial Growth for Job Creation

- Create Industrial Employment Zones with incentives for companies to hire locally
- Expand Haryana's Special Economic Zones (SEZs) and business incubators in emerging sectors.
- Boost manufacturing and agro-processing industries to absorb the local workforce
- Strategic Sector Development: Focus growth on identified key sectors such as automotive, IT, agriculture, textiles and apparels, petrochemicals, electric vehicles, ESDM, pharmaceuticals, chemicals, defence, aerospace, and toys to maximise job creation and economic impact

Promote Flexible Work Models

- Establish co-working spaces in smaller towns and rural areas, inspired by Andhra Pradesh's Work at Home Towns (W@HT) and Kerala's Work Near Home schemes

Position Haryana as an Export Hub

- Strengthen Haryana's competitiveness in textiles, processed foods, and engineering goods
- Leverage the Textile and Apparel sector, a key contributor to GSVA and employment, recognised under HEEP 2020
- Maximise fiscal incentives, infrastructure support, and strategic interventions to boost exports

Expand Rural Employment

- Promote food processing parks, dairy cooperatives, and farm-to-market linkages
- Accelerate construction-led job creation through large-scale infrastructure projects in transport, housing, and industry
- Foster climate-resilient agriculture and agro-processing industries
- Develop rural industrial parks to reduce urban migration and support local livelihoods

Short-Term Pathway (2030)

- Auto, Auto components, and Light Engineering (leveraging the State's position as the largest automobile hub)
- Electric Vehicles, Charging Infrastructure, and EV/Hydrogen/Charging Infrastructure Component Manufacturing
- Electronics System Design & Manufacturing (ESDM)
- Information Technology (IT) and Information Technology Enabled Services (ITeS)
- General Manufacturing
- Pharmaceutical and Medical Devices
- Chemical and Petrochemicals
- Agro-based, Food Processing, and Allied Industry
- Defense and Aerospace Manufacturing
- Toys manufacturing

Strengthen Incubators & Mentorship

- Invest in and expand incubators, especially in rural areas
- Launch state-supported mentorship via successful entrepreneurs
- Create a “हरियाणा के नव साहसी” network to guide emerging startups
- Expand financial incentives for women-led and marginalised startups
- Enhance existing schemes to provide targeted benefits and handholding
- Create community-driven platforms to raise awareness on financial literacy and investments
- Strengthen rural and urban SHGs and cooperative business models. Provide dedicated training and capacity-building support to women entrepreneurs
- Adopt best practices from Maharashtra (Tejaswini), Karnataka (Udyogini), and Gujarat (Mission Mangalam) to promote women-led enterprises and improve socio-economic outcomes

Long-Term Pathway (2047)

Transform Education & Employment Ecosystem

- Institutionalise continuous re-skilling and upskilling programmes across industries

Promote Gender-Inclusive Labour Markets

- Implement Social and Behaviour Change Communication campaigns in collaboration with media, NGOs, and educational institutions to challenge restrictive gender norms
- Integrate gender sensitisation curricula in schools and conduct awareness drives across urban and rural areas
- Strengthen SHGs through ‘Rozgar Sakhi’ roles, empowering women to advocate for workplace inclusion and access to economic opportunities
- Support these initiatives through community engagement programmes, skill-building workshops, and legal aid services to foster a more equitable labour market

Build District Innovation Zones

- Set up sector-specific innovation zones in every district
- Align focus areas with local strengths and existing incubators

Drive Inclusive Economic Empowerment

- Establish venture funds for marginalised entrepreneurs with patient capital
- Form village-level collectives for support services and skilling

Develop Digital Workforce:

- Invest in specialised training programmes for AI, blockchain, and cybersecurity, create industry-academia partnerships for curriculum development, and establish continuing education frameworks for rapidly evolving technologies
- Set up a Government Media & Content Academy to train youth in digital storytelling, podcasting, video journalism and create a skilled Public Relations (PR) workforce for the future

Short-Term Pathway (2030)

- Expand the care economy by increasing childcare infrastructure, taking inspiration from Haryana's partnership with NGO Mobile Crèches
- Implement gender-neutral and inclusive workplace policies, including flexible working hours, to support workers with caregiving responsibilities and boost women's labour force participation

Accelerate Skill Development

- Identify 100 high-potential rural areas for specialised skill centres and develop targeted training programmes in digital services, agri-tech, and green energy, aiming for high employment placement
- Establish Haryana Global Skill Centres (HGSCs) in collaboration with Haryana Kaushal Rozgar Nigam (HKRN), National Skill Development Corporation - I (NSDC-I), and international agencies to train and place skilled youth in global markets
- Haryana "Vikas Ambassadors" initiative to train local youth, teachers, students, SHGs, and artists as digital influencers so that they amplify accurate, positive narratives of progress and citizen rights

Create Digital Marketplaces

- Launch a comprehensive State-level MSME Marketplace Portal with seamless logistics and payment integration, alongside digital literacy training for MSMEs

Develop Human Capital

- Embed entrepreneurship modules in vocational training programmes and establish partnerships with private sector entities for hands-on training, ensuring equitable access to entrepreneurial development opportunities

Build Workforce Capacity

- Develop training programmes on energy-saving techniques, partner with transport unions and logistics companies, and implement certification programmes to standardise best practices

Long-Term Pathway (2047)

Enhance Ease of Doing Business

- Digitise business registration and permit processes
- Ensure transparency through integrated digital platforms
- Facilitate Global Trade: Launch the "Haryana Global Gateway" Initiative to host roadshows and global investment summits, and operationalise a Single Window for Inbound Investor Facilitation

Transform Policy Ecosystem

- Formulate comprehensive state-level innovation policies aligned with industry needs, integrate entrepreneurship education into school curricula, and establish long-term investment funds for high-risk innovation projects

Strategic Industrial Policy Alignment

- Ensure state policies, including the upcoming New Industrial Policy 2025, are strategically aligned with the identified key growth sectors (e.g., automotive, IT, EVs, agro-processing, etc.) to drive investment, foster innovation, and create sustainable employment opportunities

Integrate Global Knowledge

- Strengthen international partnerships through exchange programmes, develop specialised industry clusters, and create incentive structures for cross-sector partnerships

Develop Infrastructure Ecosystem

- Build 10 new Industrial Cities like IMT Kharkhoda (creating 50,000 jobs per city), develop 143 new industrial clusters of MSMEs (one in each block), develop smart city infrastructure, build specialised industrial zones, and ensure affordable access to advanced infrastructure for startups
- Implement a hub-and-spoke model for digital connectivity

Long-Term Pathway (2047)

Promote Sustainable Workforce Development

- Establish specialised training and certification courses in sustainable construction, create university partnerships for research in sustainable construction, and develop career pathways in green infrastructure

Enhance Skills for Industry Adaptation

- Conduct comprehensive workforce skills assessments, implement structured upskilling programmes focused on sustainability and digital technologies, and establish certification standards for green skills and advanced technology competencies

ISSUE 5: ADAPTING MSMEs TO NEW TECHNOLOGIES, GLOBAL STANDARDS, AND GREEN ECONOMY TO CREATE MORE EMPLOYMENT OPPORTUNITIES

MSMEs in Haryana are not just engines of economic productivity—they are potential powerhouses of employment generation, innovation, and inclusive growth. With around 18.15 lakh MSMEs, this sector holds immense promise for creating dignified and decentralised employment opportunities, particularly for youth, women, and workers transitioning from traditional sectors.⁸⁸

As global markets evolve through technological innovation, environmental standards, and digital integration, Haryana's MSMEs face the dual challenge of adaptation and employment expansion. Limited access to formal finance—reaching just 5% of enterprises—severely constrains investment in job-generating technologies and sustainable production models⁸⁹. This restricts their ability to grow, hire, and integrate with emerging sectors such as green energy, digital services, and advanced manufacturing.

Moreover, the lack of awareness about global quality standards and emerging technologies impedes both employment creation and business scaling. The imperative of digital transformation—while unlocking new business models and employment avenues such as e-commerce, online services, and gig-based production—requires targeted investments in both capital and workforce capacity. Similarly, the shift to green and circular economies, if supported strategically, could open up entirely new classes of employment—from eco-design and renewable energy services to waste management and carbon trading.

As Haryana positions itself for sustainable economic growth, the state recognises that future job markets will be increasingly based on green skills, requiring strategic investments in environmental education and training programmes that prepare workers for emerging opportunities in renewable energy, sustainable manufacturing, and eco-friendly industries. However, without ecosystem support, Haryana's MSMEs may struggle to create these future jobs and risk stagnation in an increasingly competitive and sustainability-conscious economy. Enabling MSMEs to adapt is no longer just a matter of economic modernisation—it is a foundational step toward shaping the future of work in Haryana. Strategic investments, skilling partnerships with universities, and innovation-linked support mechanisms are critical to unlocking this potential and ensuring that MSMEs become vibrant platforms of employment in the coming decades.

Current Status

Haryana's MSME landscape—comprising over 18.15 lakh enterprises—presents a compelling opportunity to generate widespread employment, especially for first-generation entrepreneurs, rural youth, women, and the semi-skilled workforce⁹⁰. However, to realise this potential, systemic gaps must be addressed through a future-of-work lens.

- ✔ **Predominance of Micro-Enterprises:** The sector comprises 12.69 lakh micro-enterprises and only 22,854 small enterprises, revealing a structural limitation in employment scalability⁹¹. Most micro units operate with a limited formal workforce or informal labour, lacking the capacity to expand or upskill. Facilitating graduation from micro to small and medium levels could significantly multiply employment intensity and formal job creation.
- ✔ **Digital Transaction Uptake (72%):**⁹² Highlights an evolving entrepreneurial base ready for digitally-enabled employment models—ranging from e-commerce logistics to fintech services. Yet, uneven adoption across enterprise sizes limits the digital gig workforce's potential, particularly in rural belts.
- ✔ **Finance Deficits vs. Job Creation Needs:** With credit disbursements at INR 37.29 trillion in FY22 and only 5% of MSMEs accessing formal finance, a vast pool of employment-generating enterprises remains capital-starved⁹³. Expanding access to finance for growth-stage MSMEs could unlock lakhs of new jobs in emerging value chains.
- ✔ **Projected Growth, Untapped Labour Demand:** Nationally, MSMEs are expected to grow from 6.3 crore to 7.5 crore by 2030. If properly supported, this expansion could accommodate a major share of India's workforce entering the labour market—yet only 2.5 crore MSMEs are expected to access formal finance, risking sub-optimal employment outcomes.⁹⁴
- ✔ **Macro-Economic Significance, Micro Employment Scope:** MSMEs contribute 29% to GDP and 49% to exports, yet many remain underutilised as engines of localised, inclusive employment—especially in Tier II/III towns and rural clusters where job demand is high.⁹⁵
- ✔ **Gender Entrepreneurship Gap:** Just 10.5% of MSMEs in Haryana are women-owned, suggesting a missed opportunity to expand job creation through women-led enterprises and gender-inclusive supply chains.⁹⁶
- ✔ **Technological Gaps Stalling Job Innovation:** Fewer than 22% of MSMEs use modern production technologies.⁹⁷ This limits their capacity to create future-oriented jobs in digital manufacturing, green tech, and Industry 4.0 services—sectors that can absorb and upskill young professionals if proper support ecosystems exist.

These statistics reveal significant untapped potential within Haryana's MSME sector, particularly regarding technological modernisation, sustainability transition, and inclusive growth across enterprise size categories and ownership demographics.

Haryana's MSMEs stand at a crossroads. If oriented toward employment-intensive growth—with digital, financial, and skills support—they can evolve from small economic units into pivotal job creators for the 2047 economy. Without this shift, their demographic and developmental potential may remain unrealised.

Factors Influencing the Issue

Haryana's MSMEs have the potential to become high-impact employment engines—especially for youth, women, and semi-skilled labour. However, several systemic barriers inhibit their ability to scale, modernise, and generate meaningful work opportunities in a transforming economy:

- **Knowledge and Skills Deficits:** The dual gap—insufficient understanding of international standards (68%) and lack of skilled workforce (72%)—hinders both enterprise competitiveness and job readiness⁹⁸. Without parallel investments in capacity-building, MSMEs are unable to hire, train, or retain skilled labour, particularly in emerging fields such as automation, compliance, or green manufacturing. This disconnect also weakens potential partnerships with universities and vocational institutions.
- **Financial Ecosystem Limitations:** Access to capital remains a foundational constraint, not just for enterprise growth, but for employment expansion. With 61% of MSMEs citing difficulties in accessing funds for technology adoption and 73% lacking green finance options, enterprises are unable to invest in job-generating technologies or expand operations that could absorb local talent.⁹⁹ This particularly limits youth employment in tech-enabled and sustainability-driven sectors.
- **Infrastructure Inadequacies:** Poor digital infrastructure, especially in rural areas (only 58% of rural MSMEs report reliable internet), undermines the growth of digital entrepreneurship and remote-work microjobs—two rapidly expanding employment models globally.¹⁰⁰ The rural-urban divide in infrastructure risks creating geographic inequity in access to MSME-led employment.
- **Market Access Challenges:** Limited access to domestic and international green markets, due to certification costs and information gaps (64% affected), not only restricts MSME growth but also stifles value chain employment in marketing, logistics, certification services, and product innovation.¹⁰¹ Market-linked support can unlock thousands of auxiliary jobs within MSME ecosystems.
- **Policy Implementation Gaps:** Although schemes exist, 57% of MSMEs struggle to navigate fragmented support systems, leading to low uptake of government employment-linked incentives.¹⁰² A simplified, one-stop digital platform could facilitate better access to hiring subsidies, skilling programmes, and youth apprenticeship schemes tied to MSME expansion.
- **Technology Ecosystem Limitations:** Limited access to appropriate technology solutions for small and medium enterprises stifles localized innovation and simultaneously reduces the demand for digitally skilled workers.¹⁰³
- **Scale-Related Constraints:** Micro-enterprises, which make up 97% of Haryana's MSMEs, face disproportionately high compliance and operational costs¹⁰⁴. This severely limits their ability to grow and

formalise jobs, resulting in persistently informal or insecure work arrangements. Targeted scale-transition support can help these units evolve into small businesses with stable employment capacities.

Addressing these barriers is essential not just for MSME resilience but to unlock their full potential as anchors of employment, innovation, and inclusive economic mobility across Haryana.

Impacts of the Issue

Direct Impact

- Outdated technologies reduce operational efficiency and limit demand for skilled labour within MSMEs
- Inability to meet environmental standards prevents MSMEs from entering green sectors, stalling the creation of green jobs
- High production costs and inefficiencies limit the capacity to expand hiring or invest in worker upskilling

Indirect Impact

- Business contraction or closure due to declining competitiveness leads to job losses, especially in export-linked and informal segments
- Missed opportunities in emerging green markets reduce long-term job potential in climate-aligned value chains
- Difficulty attracting skilled professionals, investors, or academic partnerships weakens the employment ecosystem around MSMEs

Global Learnings

Global Best Practice¹⁰⁵

Global practices show that MSME modernisation aligned with workforce development drives sustainable employment. The EU's €10 billion green finance push created jobs in clean-tech and recycling, while South Korea's Smart Factory model boosted SME productivity by 73% alongside skilling. Malaysia linked standards compliance with export jobs; Italy's SME clusters fostered job specialisation. Singapore's SkillsFuture tied tech adoption to upskilling, the Netherlands advanced circular economy jobs, and Sweden's procurement reforms spurred innovation hiring. Haryana can localise these models to unlock inclusive, job-rich growth.

Disruptive Technologies - Optimising Operations - Predictive Maintenance

Predictive maintenance leverages sensor data from machinery to forecast failures in advance, enabling machine owners to minimise maintenance costs and downtime. A Brazilian company specialises in supplying these sensors, which, when affixed to machines, provide a wealth of performance information. This allows machine owners to assess machinery states with minimal investment and receive rapid results. Embracing smart devices that generate data on equipment degradation, the company facilitates proactive maintenance strategies, empowering businesses to preemptively address issues and optimise operational efficiency.¹⁰⁶

WIPO GREEN – Global Marketplace for Sustainable Technology: WIPO GREEN is a global platform by WIPO that connects technology providers with seekers to accelerate green innovation diffusion. With over 1,20,000 listings, it empowers MSMEs to access and adopt sustainable technologies, supporting eco-friendly operations and international compliance. It fosters global collaboration on green technology transfer and sustainability solutions.

Possible Pathways

Short-Term Pathway (2030)

Identify Standards Gaps in MSMEs

- Conduct audits to assess current certifications and compliance gaps
- Align MSMEs with global standards to open up jobs in quality assurance, auditing, and export facilitation

Establish Green Technology Adoption Fund

- Offer subsidised loans for energy-efficient and clean technologies
- Enable MSMEs to create new green jobs in clean manufacturing, installation, and environmental monitoring

Promote Carbon Credit Awareness

- Develop easy-to-understand guides and run MSME-level pilot projects
- Create employment for climate consultants, carbon accountants, and verification agents

Build Sector-Specific Green Capacity

- Provide targeted training on energy efficiency, waste reduction, and sustainable processes
- Foster upskilling of existing workers and engagement of youth in high-demand green occupations

Long-Term Pathway (2047)

Standards Compliance Reward Programme

- Incentivise MSMEs to meet global quality and environmental norms
- Encourage growth of compliance-related service sectors—testing labs, training institutes, certification agencies—boosting skilled employment

Enable Carbon-Neutral MSME Supply Chains

- Introduce product and process certification for low-emission manufacturing
- Support employment in green logistics, sustainable sourcing, and environmental R&D
- Develop Sustainable MSME Infrastructure
- Establish eco-industrial parks and green clusters with shared utilities
- Generate direct jobs in infrastructure development, as well as ongoing employment in facility management, renewable energy operations, and waste services

Global Trade Facilitation

- Launch the “Haryana Global Gateway” Initiative – a platform to host biannual roadshows, global

Short-Term Pathway (2030)

- Leverage partnerships with universities and ITIs to promote industry-certified green skill programmes

Inclusive Entrepreneurship Promotion

- Create a Women & Minority Entrepreneurship Fund. Develop rural incubation hubs with mentorship support. Implement procurement policies with quotas for under-represented groups

Export Strategy Formulation

- The Global Information & Market Facilitation Team (GIFT) cell will formulate a dedicated state export policy, digital export modules, targeted market intelligence support, etc

Long-Term Pathway (2047)

- investment summits, and Government-to-Business (G2B) engagement in high-potential regions (Africa, ASEAN, Middle East, EU).
- Operationalise a Single Window for Inbound Investor Facilitation.

ISSUE 6: SOCIAL SECURITY FOR GIG AND UNORGANISED WORKERS

Haryana's labour landscape is experiencing a profound transformation with the expansion of the gig economy, characterised by flexible, temporary, and platform-mediated work arrangements. This evolution represents both significant opportunities and substantial challenges for worker welfare and economic development. While platform-based work offers unprecedented flexibility and income opportunities, particularly for workers facing barriers to traditional employment, it simultaneously creates new vulnerabilities through unpredictable earnings, limited benefits, and ambiguous employment status.

The gig economy in Haryana operates within India's broader informal labour context, where approximately 53 lakh unorganised workers from the state have registered on the e-Shram portal.¹⁰⁷ These workers span diverse sectors, including transportation, food delivery, personal services, and professional tasks facilitated through digital platforms. NITI Aayog projections indicate that India's gig workforce could reach 2.35 crore by 2030, potentially facilitating transactions exceeding USD 250 billion and contributing approximately 1.25% to the national GDP.¹⁰⁸

However, the fundamental challenge lies in the classification dilemma, where platform companies categorise workers as independent contractors rather than employees. This classification allows platforms to optimise operational flexibility while simultaneously excluding workers from traditional employment protections and benefits. The resulting precarity is particularly concerning in a state like Haryana, where social security coverage for informal workers remains limited, with significant gaps in health protection, income security, and retirement benefits.

The development of comprehensive social security mechanisms for gig and platform workers thus emerges as a critical policy priority for Haryana. Such frameworks must balance the inherently flexible nature of gig work with the fundamental need for worker protection, creating portable benefit systems that provide essential coverage while preserving the innovation and efficiency that characterise the platform economy.

Current Status

Haryana's gig and unorganised worker landscape demonstrates significant scale and complexity:

- ✔ **Worker Registration:** 53.87 lakh unorganised workers from Haryana registered on the e-Shram portal as of April 2025, representing approximately 7.5% of the state's working-age population¹⁰⁹
- ✔ **Sectoral Distribution:** Platform-based work spans diverse sectors including mobility (28%), delivery services (22%), home services (14%), professional services (11%), and other categories (25%)¹¹⁰
- ✔ **Worker Preferences:** Boston Consulting Group's research indicates that twice as many gig workers prefer independent platform work over traditional employment, citing schedule flexibility (87%), supplemental income opportunities (69%), and work variety (58%) as primary motivations¹¹¹
- ✔ **Market Potential:** Approximately 24 million jobs across India could migrate to technology-based gig platforms in the near-medium term, with an estimated 90 million roles potentially "gigable" based on task characteristics¹¹²
- ✔ **Economic Impact:** India's gig economy is projected to transact over USD 250 billion of work annually by 2030, contributing approximately 1.25% to India's GDP¹¹³
- ✔ **Digital Penetration:** 64% of Haryana's working-age population has smartphone access, but only 38% report comfort with platform-based work applications, indicating digital barriers to gig economy participation¹¹⁴

These statistics reveal both the substantial growth potential and significant protection gaps characterising Haryana's gig economy, underscoring the need for innovative social security approaches that align with the sector's unique characteristics.

Factors Influencing the Issue

- **Data Visibility Limitations:** Inadequate data systems for tracking distributed work patterns across multiple platforms create challenges in determining contribution requirements and benefit eligibility, with just 34% of platform workers' earnings comprehensively documented¹¹⁵
- **Digital and Financial Inclusion Barriers:** Digital literacy limitations (affecting 47% of potential workers) and financial inclusion gaps (38% lacking formal banking access) constrain both participation in the platform economy and access to digital benefit systems¹¹⁶
- **Platform Economic Models:** Platform commission structures averaging 20-30% of transaction value limit worker earnings potential, while algorithmic management systems prioritising customer experience can create earnings unpredictability for workers¹¹⁷
- **Policy Implementation Challenges:** Despite the Code on Social Security 2020's provisions for gig workers, implementation mechanisms remain underdeveloped, with funding sources, administrative structures, and delivery systems still evolving¹¹⁸
- **Heterogeneity of Work Arrangements:** The diversity of platform work—ranging from full-time engagement to occasional supplemental earnings—creates challenges in designing universally appropriate benefit structures¹¹⁹
- **Skilling and Career Development:** Limited pathways for skill development and career progression constrain long-term economic security, with only 23% of platform workers reporting access to structured upskilling opportunities¹²⁰

Addressing these multidimensional challenges requires coordinated interventions across policy, technology, and market dimensions to create a comprehensive social protection ecosystem for gig and platform workers.

Impacts of the Issue

Direct Impact

- Financial vulnerability of gig workers due to income volatility, lack of healthcare coverage, and absence of retirement benefits
- Limited ability of platform workers to invest in skills development and education due to financial constraints and a lack of structured career pathways
- Health and safety risks for workers in hazardous occupations without adequate protections or insurance coverage

Indirect Impact

- Reduced consumer spending and economic participation due to financial insecurity, creating demand constraints in local economies
- Diminished workforce adaptability and skills progression, limiting Haryana's ability to meet evolving industry needs
- Increased burden on public healthcare systems and social welfare programmes to address preventable health issues

Global Learnings

Global Best Practice¹²¹

Global models for gig worker protection balance flexibility with social security through innovative frameworks. California's portable benefits allocate 5–6% of earnings across platforms, while France mandates platform contributions to social funds. Spain's hybrid "Riders Law" boosted coverage by 40%. Cooperative models like New York's "Up & Go" return 95% revenue to workers. Sweden ensures minimum earnings via sectoral bargaining, Finland's basic income improved well-being (78%), and Singapore's SkillsFuture supports upskilling.

European Union's Directive on Platform Work:¹²²

The EU's 2024 Directive on Platform Work secures labour rights for gig workers by establishing clear criteria for employment status and mandating benefits like minimum wage, paid leave, and pensions when platforms exert control. It also requires human oversight of algorithms, enabling workers to challenge automated decisions. This directive marks a major step toward balancing flexibility with robust worker protections.

Disruptive Technologies - Empowering Gig Workers: Innovations in Retirement Planning

The evolution of retirement planning is increasingly addressing the unique challenges encountered by gig workers in securing their financial futures. Recognising the importance of proactive retirement savings, investment strategies, and long-term financial planning, this trend highlights the necessity for gig workers to take control of their retirement plans. Startups are spearheading solutions aimed at providing gig workers with employer-provided retirement benefits and consistent income streams. Innovations such as retirement apps, pension planning services, robo-advisors, and online retirement calculators are empowering gig workers to navigate their financial journeys with confidence. By leveraging these tools, gig workers can proactively build a solid financial foundation for retirement, ensuring greater financial security and peace of mind for the future.¹²³

Possible Pathways

Short-Term Pathway (2030)

Legislative Action and Scheme-Based Delivery

- Prioritise the timely enactment of the bills for the social security and welfare of gig and platform workers currently being drafted by the Government of Haryana
- Adopt a parallel scheme-based implementation approach to ensure timely access to welfare benefits. Reference best practices from Telangana, Karnataka, Tamil Nadu, and West Bengal to design targeted social protection programmes for gig and informal workers

Policy Alignment and Worker Protections

- Integrate paid sick leave into gig and platform work arrangements, aligned with the Code on Social Security, 2020, as recommended in the NITI Aayog Report
- Improve worker safety and mobility by:
 - Providing road safety training
 - Accident insurance coverage and grievance redressal mechanisms
 - Enhancing urban mobility infrastructure for safer transit for workers operating in city environments

Financial Inclusion and Credit Access

- Facilitate informal workers' access to a broad range of financial services, including microfinance, savings accounts, insurance products, and digital payment systems. These measures will help workers manage their finances, invest in their livelihoods, and reduce risk exposure
- Expand Access to Government Credit Programmes for Urban informal workers, and gig and platform workers. These workers should be actively linked to existing credit schemes under various state government programmes, and their inclusion should be prioritised

Social Security Benefits

- Roll out targeted schemes (insurance, pension, aid) for gig/unorganised workers
- Launch pilot programmes to test the impact and refine the design
- Secure both short-term risk protection and long-term security

Digital Registration and Monitoring

- Launch a dedicated portal to onboard and track workers
- Assess platform impact on livelihoods before roll out to ensure the system is user-centric and beneficial
- Reduce entry barriers by supporting access to essential assets such as mobile phones, vehicles, and digital tools through subsidies, financial assistance, or leasing programmes
- Launch initiatives to promote digital literacy and market access, enabling workers to effectively engage with both small and large platforms and contribute to inclusive, sustainable sectoral growth
- Emphasise the potential for increasing women's participation in the gig and platform economy, as highlighted in the NITI Aayog report
- Implement real-time dashboards for benefit delivery and scheme usage
- Integrate fast, transparent grievance redressal tools

Innovation and Enterprise Support

- Promote innovation and entrepreneurship to strengthen Haryana's informal economy. Support social enterprises, emerging technologies, and alternative business models. Facilitate enterprise development through structured training, mentorship, access to finance, and incubation services

Short-Term Pathway (2030)

Outreach and Awareness

- Design clear, regional-language IEC materials (Hindi, Haryanvi, etc.)
- Drive multi-platform awareness campaigns (digital, social, local media)
- Mobilise outreach through gig platforms, unions, and local bodies
- Leverage existing Employment Exchanges and Model Career Centres to provide assistance and advocacy, addressing workplace concerns and promoting fair labour practices

Skill Development & Capacity Building

- Prioritise capacity building and social infrastructure development for gig and unorganised workers. The state should invest in training related to financial and digital literacy, entrepreneurship, occupational safety, and legal rights

- Prioritise skilling initiatives for gig and platform workers through partnerships with leading digital platforms like Ola, Uber, Amazon, and Urban Company. Develop a structured, industry-aligned upskilling framework to support both horizontal and vertical mobility, enabling workers to diversify their skills and access better earning opportunities
- Invest in education and training programmes to improve the skills and earning potential of gig and unorganised workers
- Prepare a globally competitive workforce for emerging technological challenges

Long-Term Pathway (2047)

Integrating Social Security into Labour Laws

- Mandate platform and employer contributions to social schemes for gig workers, ensuring alignment with existing labour laws
- Use digital tools to monitor compliance

Exploring Universal Basic Income (UBI)

- Set up an expert group for a feasibility study
- Do a fiscal and cost-benefit analysis
- Conduct surveys and focus groups
- Learn from UBI pilots in India

Strengthening Administrative Capacity

- Audit department resources and gaps
- Train staff on digital delivery and grievance redressal

- Leverage AI/ML for tracking and analysis, and deploy multilingual AI chatbots to strengthen administrative capacity for gig worker social security
- Technology-Enabled Service Delivery to achieve 100% digital connectivity for service delivery
- Form an expert tech task force
- Integrate blockchain with social systems
- Enable digital IDs for gig/unorganised workers

Fostering Social Cohesion and Inclusion

- Host state-level forums and consultations
- Ensure benefits for women, migrants, Persons with Disabilities (PwDs)
- Organise annual worker events for solidarity

BIG ACTIONS

1. Teach-to-Transform 2.0

A new age teacher development initiative merging advanced digital pedagogy and hands-on vocational training in every classroom, complemented by a state-backed cluster of solar-powered education hubs in rural areas. This synergy ensures interactive, inclusive learning for all ages—complete with blended instruction, career counselling, and skill workshops—empowering Haryana's youth to excel in a rapidly changing global landscape.

2. Future Skills Programme

Haryana will integrate coding, robotics, and green technology into every school and college curriculum (in partnership with industry), ensuring youth are prepared for high-tech and sustainable jobs of the future. An immersive learning ecosystem will be developed that uses AI-driven adaptive lessons, virtual reality simulations, and real-time collaborations with local industry.

3. Project Infinity

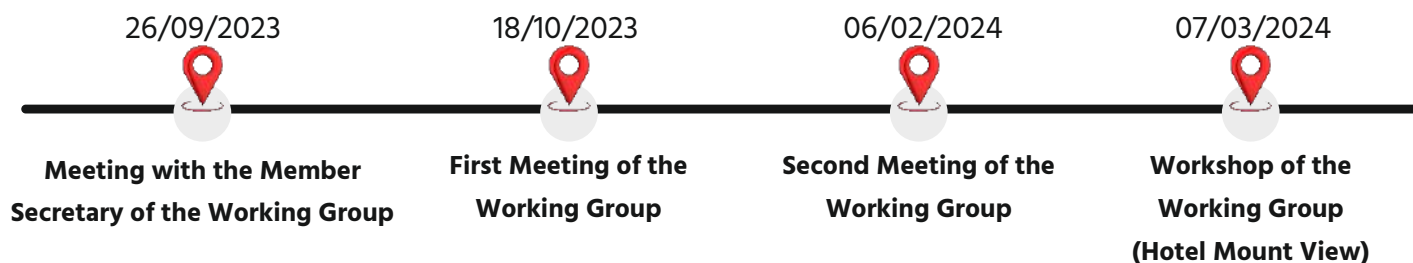
A bold new endeavour that establishes specialised centres for cutting-edge research in AI, biotech, and quantum technologies—pioneering breakthroughs by uniting academia, startups, and public agencies under one collaborative framework. Through these advanced laboratories and innovation clusters, Haryana aims to become a global centre of discovery, nurturing the next generation of scientists and entrepreneurs.

WORKING GROUP - 2

Departments

- | | | | |
|--|--|--|-------------------------|
| 1. Elementary Education | 2. Secondary Education | 3. Higher Education | 4. Technical Education |
| 5. Skill Development and Industrial Training | 6. Department of Industries and Commerce | 7. Directorate of Micro, Small, & Medium Enterprises | 8. Science & Technology |
| 9. Employment | 10. Labour | 11. Social Justice, Empowerment, Welfare of Scheduled Caste & Backward Classes, and Antyodaya (SEWA) | |

Timeline



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HEALTH AND NUTRITION



WHERE ARE WE?

Strengths

- Strong healthcare infrastructure
- High institutional delivery rate at 96.5% and improving maternal health indicators
- Significant reduction in childhood stunting, wasting, and underweight prevalence
- Digital health systems like e-Sanjeevani and Ayushman Bharat Health Account (ABHA) are in active use
- Focus on preventive healthcare through wellness centres, yoga, and millet promotion
- Effective schemes like CHIRAYU, Ayushman Bharat, and Anaemia Mukta Haryana

Areas of Improvement

- Persistently high anaemia levels among women and children
- Concerning burden of Non-Communicable Diseases (NCDs), obesity, and hypertension across all demographics
- Multi-tasking of health workers
- Gender disparities in access, outcomes, and health-seeking behaviours
- Rural-urban gap in digital health access and service penetration
- Need for strategy shift due to rising urbanisation and migration

Opportunities

- Expansion of AI, digital tools, and real-time health monitoring systems
- Leveraging traditional foods and agroecological practices for better nutrition
- Community-based preventive care through Health and Wellness Centres (HWCs) and school health programmes
- Global partnerships and best practices adaptable to the state context
- Policy alignment with SDGs, NHM, and national nutrition missions

Threats

- Climate-linked health risks and rising pollution-related diseases
- Antimicrobial resistance and new infectious disease threats
- Technology-led exclusion of rural, elderly, and digitally unskilled populations
- Misinformation and low health literacy fueling distrust and poor compliance
- Inadequate emergency preparedness for pandemics and climate shocks

WHERE DO WE WANT TO GO?

VISION



By 2047, Haryana will build a pioneering health and nutrition ecosystem under the Future-Ensured Families framework, ensuring a healthier, empowered society free from disease, malnutrition, and disparity.

MISSION



Transform healthcare in Haryana through the Future-Ensured Families approach, anchored in **the Healthy, Hopeful, and Happy (HHH)** pillars, to ensure universal health coverage, gender equity, preventive wellness, and resilient health systems for all incorporating regional diversity, with special attention to border districts, vulnerable castes, and seasonal migrant populations.

GOALS

- Life Expectancy (Male) > 75 years
- Life Expectancy (Female) > 80 years
- MMR < 10 per lakh live births
- IMR < 5 per 1,000 live births
- Children under 5 years who are stunted < 5%
- 100% Full immunisation coverage (9-11 months)
- Healthcare worker density: 84 per 10,000 population

ASPIRATIONAL FUTURE

A future where Haryana becomes a national model for equitable and preventive healthcare by implementing inclusive, technology-enabled systems and empowering every citizen with access to quality services. The state emerges as a leader in AI-driven health innovation and nutrition security, ensuring resilient families and eliminating malnutrition, disease burden, and gender-based health disparities.

HOW WILL WE REACH THERE?

Nutritional Challenges: Strengthen monitoring systems, fortify food programmes, and promote precision nutrition through digital tools and community-based interventions.

Rising NCDs: Expand screening, launch lifestyle campaigns, and integrate AI-driven prevention and early diagnosis into public health systems.

Digital Transformation in Healthcare: Establish interoperable digital platforms, expand rural telemedicine, and train health workers in AI and remote care delivery.

Gender Disparities in Healthcare: Mainstream gender budgeting, improve access for women and girls, and institutionalise inclusive infrastructure and support services.

Healthcare Access Transformation: Scale up preventive services, decentralise governance, and embed wellness promotion into education, urban planning, and food systems.

Resilient Health Systems: Build pandemic-ready infrastructure, implement early-warning systems, and strengthen intersectoral coordination for emergency response.

3 BIG ACTIONS

01 **Social Security 360°
Plan**

02 **Health Rise 2047**

03 **Family Guard 2047**

INTRODUCTION

Haryana has achieved significant progress in healthcare, demonstrating substantial improvements in key indicators such as maternal health services, institutional deliveries, and reduced childhood stunting and wasting. The state has established a robust health infrastructure with an extensive network of hospitals, PHCs, and HWCs have expanded healthcare access and addressed specific health challenges. The healthcare system is transitioning from treatment-centric to prevention-focused approaches, with expanded digital healthcare services and programmes promoting traditional foods and physical wellness through yoga and meditation. However, persistent challenges remain, including high prevalence of anaemia among women (60.4%), increasing obesity rates in adults, and rising NCDs.¹ The state continues to navigate a triple burden of addressing malnutrition, tackling NCDs, and reducing gender disparities in healthcare access, particularly in rural and underserved areas.

WHERE ARE WE?

Haryana's healthcare sector is undergoing a gradual transition, marked by demographic shifts, digital advancements, and an increasing emphasis on preventive healthcare. Despite notable progress, the health landscape remains a blend of achievements and persisting challenges in three critical areas:

Current Status

Malnutrition and Anaemia: Prevalence of anaemia in women (15-49 years) marginally decreased from 62.7% (NFHS-4) to 60.4% (NFHS-5). Childhood stunting decreased from 34.0% (2015-16) to 27.5% (2020-21), wasting decreased from 21.2% to 11.5%, and underweight children decreased from 29.4% to 21.5%.²

NCDs: As high as 67.3% of deaths are premature in the State, with ischemic heart diseases, Chronic Obstructive Pulmonary Disease (COPD), and Diabetes Mellitus Type 2 contributing the majority of Disability-Adjusted Life Years (DALYs) in the State (NCDs contribute to 60.99% of DALYs).³ Hypertension affects 26.2% of urban and 24.6% of rural men.⁴ Obesity increased significantly: from 21.0% to 33.1% for women and from 20.0% to 28.3% for men between 2015-16 and 2020-21.⁵

Health Infrastructure (2025)^{6,7}

- 22 District Civil Hospitals, 50 Sub-Divisional Hospitals, 122 CHCs
- 408 PHCs, 107 Urban PHCs, 2,734 Sub Health Centres
- 2,722 HWCs
- 148 Services (ICDS) Projects (127 rural + 21 urban)
- 25,962 Anganwadi Centres (including 512 Mini AWCs)
- From just two Government/Government-aided and three private medical colleges in 2011, Haryana now has six Government, one Government-aided, and eight Private Medical Colleges in 2025
- Haryana has three main Employees' State Insurance Corporation (ESIC) Hospitals (Faridabad, Manesar, Gurugram), plus multiple Employees' State Insurance (ESI) dispensaries and several empanelled private hospitals providing services to ESIC beneficiaries.
- Two new Government Medical Colleges (Bhiwani & Mahendragarh) will be added in 2025, with seven more planned in Jind, Sirsa, Yamunanagar, Kaithal, Fatehabad, Palwal, and Charkhi Dadri, plus a Super Speciality Health University at Kutail, Karnal

- AllMS Jhajjar (with National Cancer Institute) is functional, and another AllMS is under construction at Rewari
- Six new nursing colleges will be added in 2025; nursing colleges are also planned at five upcoming Government Medical Colleges, along with paramedical colleges at five locations and a Government Dental College at Nuh

Life Expectancy and Mortality (2021-22)

- Life Expectancy: Males - 69.37 years; Females - 74.09 years⁸
- IMR: Urban - 28.6 per 1,000 live births; Rural - 35.3 per 1,000 live births
- Under-5 Mortality Rate: Urban - 36.0 per 1,000 live births; Rural - 39.8 per 1,000 live births⁹

Maternal and Child Health

- MMR: 89 per 1,00,000 live births (Special Bulletin on Maternal Mortality in India 2020-22)
- Institutional Births: 94.9% (2020-21)¹⁰
- Childhood Stunting: 27.5%, Child Wasting: 11.5%, Child Underweight: 21.5% (2020-21)¹¹

Disease Burden

- Communicable Diseases burden: 26.88% (2019)¹²
- NCDs now make up nearly 59% of Haryana's total disease burden, with ischaemic heart disease and COPD leading causes of death and disability.¹³
- Tuberculosis (TB) case notification rate: 260.8 per 1,00,000 population¹⁴
- Obesity prevalence: Women - 33.1%, Men - 28.3% (2020-21)¹⁵
- Hypertension prevalence: 26.2% (urban), 24.6% (rural) (2020-21)¹⁶

Healthcare Access and Financing

Out-of-Pocket Health Expenditure (OOPE) in Haryana:

- OOPE as a share of total health expenditure dropped from 45.5% (2019-20) to 37.5% (2021-22), reflecting effective government interventions like Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (AB-PMJAY), upgraded Ayushman Arogya Mandirs (AAMs), free drugs & diagnostics, and wider access to affordable generics through Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP)¹⁷
- The state has fully implemented AB-PMJAY and expanded health coverage to all families earning up to INR three lakh per year through its own Comprehensive Health Insurance of Antyodaya Units (CHIRAU) and CHIRAU Extension schemes
- The state provides free dialysis services to all residents under the PPP model, along with free CT/MRI and Cath Lab services at District Hospitals and Medical Colleges
- Per Capita Money Spent on Public Health: INR 3,237 (2021-22)¹⁸

Mental Health Statistics

Common Mental Disorders

- A comprehensive study¹⁹ in rural Haryana found that 20% of adults screened positive for Common Mental Disorders. The prevalence was significantly higher among:
 - Those aged 60 years or older (12.33 times higher risk)
 - Widowed, divorced, or separated individuals (7.50 times higher risk)
 - Illiterate individuals (6.25 times higher risk)
 - Those with monthly family income below Rs 10,000 (3.33 times higher risk)

Depression in Adolescents

A study²⁰ in rural Haryana revealed that 20.6% of adolescents (aged 10-19 years) screened positive for depression.

The prevalence was:

- Higher in girls (22.3%) compared to boys (19.2%)
- 11.7% in late adolescence and 8.9% in early adolescence

Mental Health Workforce in Haryana

Clinical Psychologists

Haryana has 87 clinical psychologists (as of July 2023) registered with the Rehabilitation Council of India²¹

Faridabad District Case Study²²

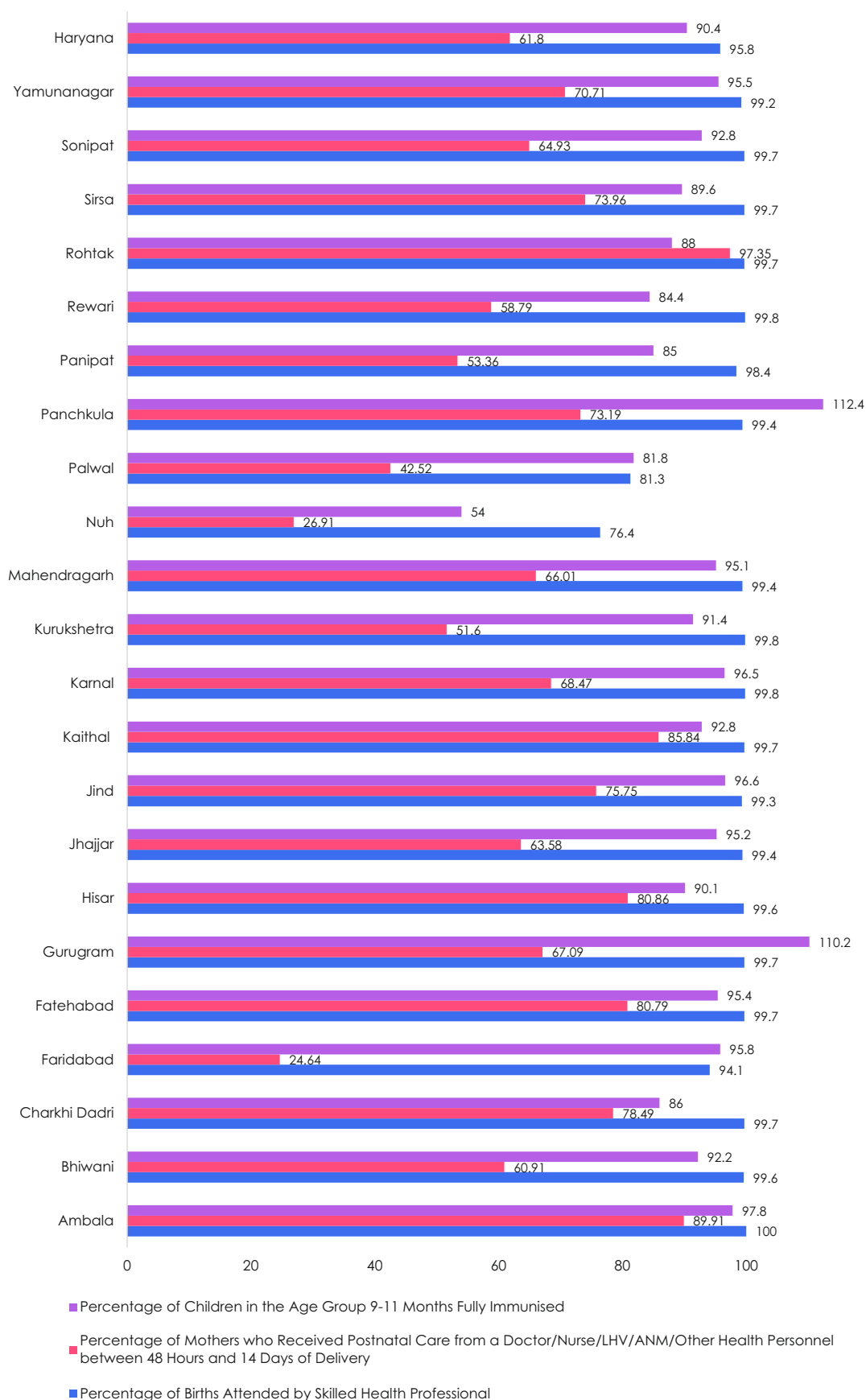
A detailed mapping study of Faridabad district revealed:

- 16 psychiatrists in total serving the district
- 14 psychiatrists in private practice
- 2 psychiatrists in public health facilities
- Most psychiatrists concentrated in urban areas

Implementation of District Mental Health Programme (DMHP) in Haryana²³

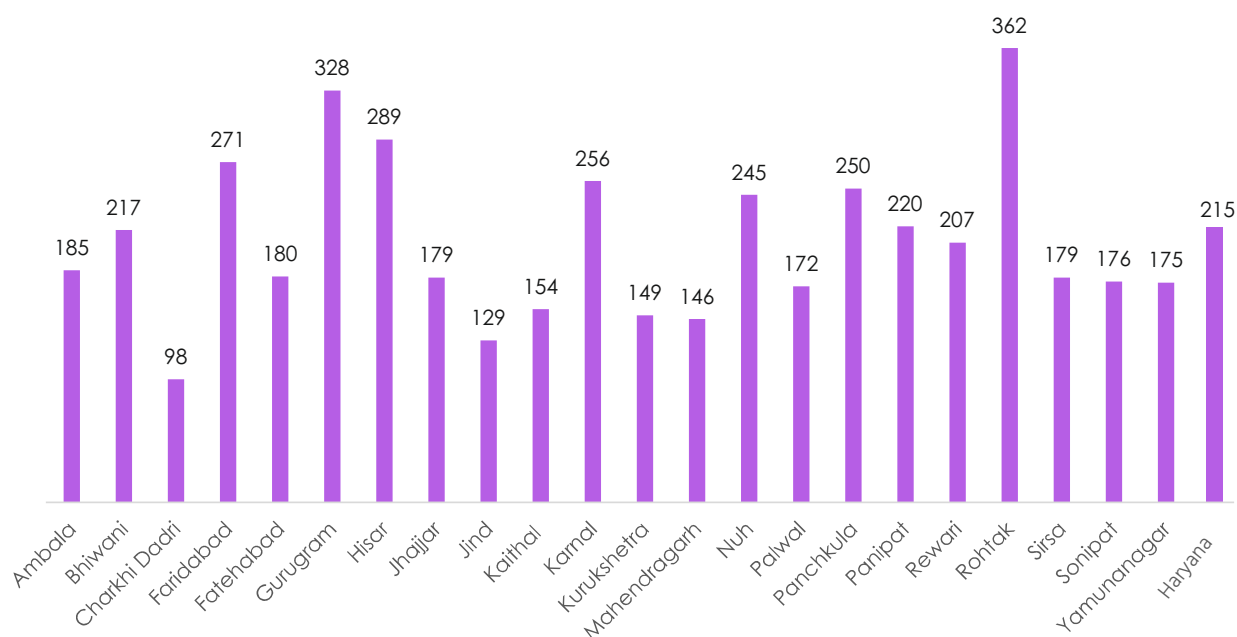
Haryana has implemented the DMHP in all 22 districts of the state as part of the National Mental Health Programme. The DMHP operates under the NHM and provides comprehensive mental health services.

Maternal and Child Health Indicators: Skilled Birth Attendance, Postnatal Care, and Child Immunisation Rates



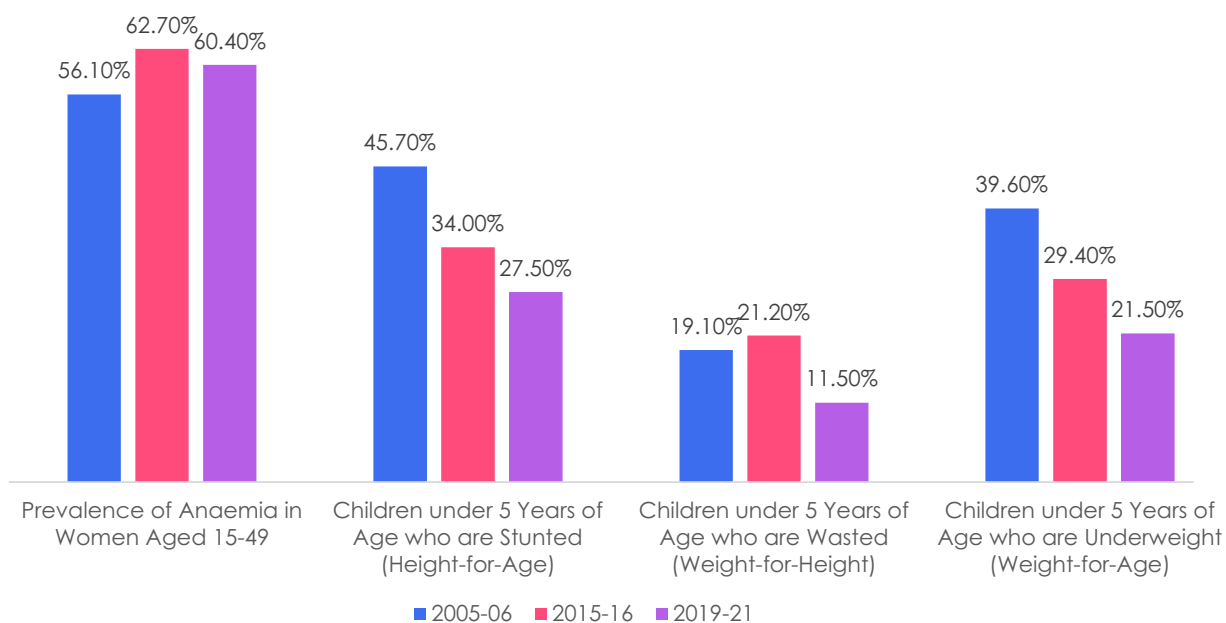
Graph 16: Maternal and Child Health Indicators: Skilled Birth Attendance, Postnatal Care, and Child Immunisation Rates
(Source: Haryana SDG District Index 2022 Consultative Document)

Tuberculosis Incidence per 1,00,000 Population



Graph 17: Tuberculosis Incidence per 1,00,000 Population
(Source: Haryana SDG District Index 2022 Consultative Document)

Nutritional Status Indicators: Anaemia and Malnutrition among Women and Children



Graph 18: Nutritional Status Indicators: Anaemia and Malnutrition among Women and Children
(Source: NFHS Reports for the years 2005-06, 2015-16 and 2019-21)

FUTURES TRIANGLE

(*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

Pushes of the Present

Positive

HWCs (2,722) in Haryana are strengthening preventive, promotive, and curative care while integrating Panchkarma AYUSH centres for holistic health services²⁴

Food Security Act amendments & technological advancements improving nutritional outcomes

Strengthened healthcare access through AYUSHMAN BHARAT, CHIRAYU, with transparent beneficiary selection

Commitment to controlling **NCDs** through inclusion in the NHM

Digital healthcare tools, including CoWIN, UWIN, eVIN, eUpchaar, eSanjeevani, and ABHA platforms

Budget allocation of 6.3% (of total expenditure) for healthcare in 2024-25²⁵

HWCs in Haryana being integrated with **Panchkarma AYUSH centres** to provide holistic healthcare, combining modern medicine with traditional Ayurvedic therapies to enhance preventive, promotive, and curative healthcare, offering services like yoga, naturopathy, and Panchkarma treatments alongside primary healthcare implementation of **Poshan Abhiyan** to combat malnutrition

State One Health Coordination Cell should be created to ensure collaboration between veterinary services, public health agencies, and environmental departments

Negative

Lifestyle-related habits are gradually contributing to a rise in NCDs like diabetes and hypertension

Growing mental health challenges, particularly rising stress, anxiety, and depression among urban youth and peri-urban populations

Rising pollution levels are adding to respiratory health issues and may be impacting overall well-being

Malnutrition and anaemia among women and children remain a concern, partly due to challenges in regular monitoring and follow-up.

Gender bias affecting access to adequate nutrition

Positive

SANKALP Authority Established: Haryana has constituted the SANKALP Authority (Substance Abuse & Narcotics Knowledge, Awareness & Liberation Programme Authority) as the central state body responsible for coordinating all government and societal efforts to eliminate both drug demand and supply, and guide the state's youth toward responsible development.

Pulls of the Future

Positive

Shift towards preventive healthcare through regulatory measures and health-promoting programmes

Integration of Poshan tracker and Reproductive and Child Health (RCH) portal for enhanced monitoring. Promotion of **sustainable agriculture and traditional foods** like millets

Routine surveillance systems for early detection of disease outbreaks

AI applications in healthcare improving early detection of malnutrition and disease, and mental health challenges (e.g., depression, suicide risk)

Use of **AI-based TB detection** piloted in Gurugram district hospitals

Negative

Resource scarcity challenges impacting health system strengthening efforts

Unregulated pesticide use increasing cancer and health risks

Water pollution with chemicals and heavy metals posing significant health hazards

Insufficient public health awareness fostering misinformation and panic

Climate change and changes in disease patterns

Rapid/unplanned urbanisation, and resource crunch in peri-urban areas

Rising prevalence of NCDs affecting productivity and national development

Weights of the Past

Positive

Success of targeted vaccination campaigns in eradicating diseases like smallpox and polio, and COVID vaccination drive

Negative

Conservative social mindset hindering efforts to address patriarchal norms

Positive

Focused approach and **digitalisation of procurement** of Medicines and Medical Equipment, improving governmental efficiency

Government schemes promoting gender equality, like **BBBP**

Legal age of marriage increased to 18 promoting girls' physical and mental well-being

Negative

Skewed sex ratio (910 females per 1,000 males in December 2024)²⁶

Cultural preference for male children contributes to skewed health resource allocation within families

Low female literacy rates (65.94%) exacerbating health disparities²⁷

Disproportionate focus on maternal and child health at the cost of focusing on NCDs

High prevalence of **childhood undernutrition** straining family resources

Longstanding social stigma around mental health issues and lack of institutional services historically

WHERE DO WE WANT TO GO?

VISION 2047

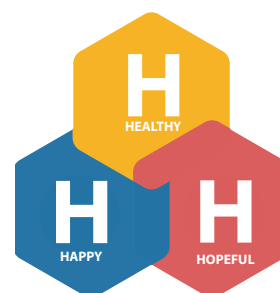
By 2047, Haryana will lead the nation in building a pioneering health and nutrition ecosystem that is equitable, innovative, and preventive. Harnessing the power of advanced technologies and inclusive strategies, the state will focus on Future-Ensured Families who can thrive in a healthier, empowered society, free from the burdens of malnutrition, disease, and disparity.

- **End malnutrition and anaemia:** Leverage precision nutrition programmes and real-time monitoring systems to ensure no child or adult is left behind.
- **Revolutionise NCD care:** Lead the way in predictive healthcare through early diagnosis, transformative interventions, and sustainable lifestyle shifts.
- **Digitise healthcare delivery:** Achieve seamless integration of advanced digital solutions for universal access to high-quality care.
- **Champion gender equity in healthcare:** Dismantle barriers with inclusive policies, ensuring equitable access for every individual.

- **Preventive healthcare at the core:** Embed wellness and prevention into every facet of healthcare policy and practice.
- **Strengthen health resilience:** Develop adaptive systems ready to combat pandemics, climate challenges, and emerging health crises.

STRATEGIC MISSION* : Future-Ensured Families – The HHH Approach

Haryana's vision for 2047 must be anchored in family well-being through a holistic framework. The HHH Approach—Healthy, Hopeful, and Happy—provides an integrated strategy to strengthen healthcare access, enhance financial security, and develop robust social infrastructure for all families across the state.



1. HEALTHY: Universal Healthcare for a Stronger Haryana

Building on the foundation of Ayushman Bharat, Haryana will expand universal health coverage through strategic purchasing (aligning funding and incentives with provider performance) to ensure comprehensive, cashless care for all families. This expansion will focus on targeted maternal and child health interventions, such as allowing birth companions during delivery, to provide emotional support and improve outcomes, aiming to reduce maternal and infant mortality rates. Haryana will strengthen its immunisation efforts by adopting focused strategies to reach underserved and hard-to-reach areas, with the goal of achieving 100% vaccination coverage across the state.

The state will strengthen preventive healthcare through community-based screening, scaling up of “e-Upchaar” for teleconsultations in rural belts, early intervention, and health promotion activities that address both communicable and non-communicable diseases at their roots.

2. HOPEFUL: Social Security for a Resilient Society

Haryana will develop a comprehensive social security framework that provides enhanced financial protection through the Dayalu scheme, offering life and accidental insurance coverage for vulnerable populations, including daily wage earners, farmers, and informal workers. The state will implement a streamlined social pension delivery system by adopting citizen-friendly best practices to ensure timely and efficient support for elderly citizens at their doorstep. Furthermore, Haryana will create inclusive public infrastructure with accessibility modifications for differently-abled individuals based on successful models of accessible transportation and built environments, ensuring that all citizens can participate fully in social and economic life.

3. HAPPY: Investing in Care Economy and Women's Empowerment

Recognising the strong link between family well-being and economic growth, Haryana will set up state-supported childcare centres in urban and industrial areas to support working parents and encourage greater participation of women in the workforce. The state will develop an elder care support system that combines institutional and home-based care options for ageing populations, acknowledging the changing demographic profile and family structures. Additionally, Haryana will create formal recognition and support mechanisms for care work, acknowledging its significant contribution to economic development while addressing the disproportionate burden often placed on women. Women Wellness Centres are being integrated with

*Aligned Departments: Health & Family Welfare, Medical Education & Research, Public Health Engineering, Rural Development, Revenue & Disaster, Development & Panchayats, Rural Development, Urban Local Bodies, Women & Child Development, Social Justice & Empowerment, Welfare of SCs/BCs

ULBs in Gurugram and Karnal, ensuring accessible healthcare and well-being services for women in urban areas. These investments in the care economy will not only improve quality of life but also drive economic growth through increased labour force participation and productivity.

In pursuit of this vision, the state has outlined several goals across economic growth and public safety.

GOALS

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--------------------------------|------------------------------------|--|----------------------------------|----------------------------------|--------------------------------------|---|
| Life Expectancy (years) | Male: 69.37 Female: 74.09 | National Commission on Population, Ministry of Health & Family Welfare, 2021-25 | Male: 72.0 Female: 77.0 | Male: > 73 Female: > 78 | Male: > 75.0 Female: > 80.0 | India's National Health Policy 2017 targets increasing life expectancy to 70+ years by 2025. Global benchmarks include the WHO's SDGs, which emphasises healthy lives for all. Higher-income countries average 80+ years of life expectancy, providing aspirational targets for 2047. |
| MMR (per 1,00,000 live births) | 89 | Special Bulletin on Maternal Mortality in India 2019-21, Office of Registrar General | 70 | 49 | < 10 | WHO SDG target 3.1 aims for global MMR below 70 by 2030. Countries with strong health systems achieve rates below 10. Finland, Norway, and Japan have achieved rates of 3-5, demonstrating near-elimination of preventable maternal deaths are possible with comprehensive healthcare access. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|----------|--|-------------|-------------|-------------|---|
| IMR (per 1,000 live births) | 28 | Sample Registration SYSTEM, Office of the Registrar General, India May, 2022 | 15 | < 11 | < 5 | India's National Health Policy 2017 targets IMR of 28 by 2019. WHO SDG 3.2 targets under-5 mortality of 25 per 1,000 live births by 2030. Best-performing nations like Japan, Finland, and Singapore have an IMR of 2 or lower, setting the 2047 aspirational target. |
| Prevalence of anaemia in women (15-49 years) (%) | 60.4% | National Family Health Survey-5, 2019-21 | 30% | 25% | 15% | WHO Global Nutrition Targets aim to reduce anaemia in women of reproductive age by 50% by 2025. Most developed countries maintain anaemia rates below 15%. Nations with comprehensive nutrition programmes like Sweden and Norway achieve rates below 10%. |
| Children under 5 years who are stunted (%) | 27.5 | National Family Health Survey-5, 2019-21 | 13.5 | < 11 | < 5 | India's POSHAN Abhiyaan aims to reduce stunting to 25% by 2022. SDG target is 40% reduction from 2012 levels by 2025. World's best performing countries like Denmark, Japan, and South Korea have stunting rates below 2.5%. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---------------------------------------|--------------------------|--|--------------------------|----------------------|------------------------|---|
| Obesity prevalence in adults (%) | Women: 33 Men: 28.3 | National Family Health Survey-5, 2019-21 | Women: 25.0 Men: 20.0 | Women: 17 Men: 14 | < 5 | WHO Global NCD Action Plan targets halting the rise in obesity by 2025. Best performing countries in obesity management maintain rates of 15-20% through comprehensive prevention and management strategies. Japan achieves rates of 4.3% (men) and 3.7% (women). |
| Hypertension prevalence in adults (%) | Women: 21.0 Men: 25.1 | National Family Health Survey-5, 2019-21 | Women: 16.2 Men: 19.9 | Women: 12 Men: 16 | Women: 5.0 Men: 9.0 | WHO's Global NCD Action Plan targets 25% relative reduction in hypertension prevalence by 2025. Countries with strong preventive healthcare like, Canada, achieve rates below 15%. South Korea and Switzerland demonstrate best practices with rates below 10%. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|----------|--|-------------|-------------|-------------|---|
| Full immunisation coverage (9-11 months) (%) | 90.4 | National Family Health Survey-5, 2019-21 | 95 | 97 | 100 | Global Vaccine Action Plan targets 90% national coverage for all vaccines by 2030. Several countries including Singapore, South Korea, and Hungary achieve near 100% coverage, demonstrating the feasibility of universal immunisation. |
| TB incidence (per 1,00,000 population) | 260.8 | National TB Elimination Programme India TB Report 2024 | 130 | 88 | < 10.0 | India's National Strategic Plan for TB Elimination aims to achieve TB-free status by 2025. WHO's End TB Strategy targets a 90% reduction in the TB incidence rate by 2035 compared to 2015. Countries like USA, Canada, and Australia maintain rates below 10 per 1,00,000. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|----------|---|-------------|-------------|-------------|--|
| Healthcare worker density (per 10,000 population) | 46.8 | Public Health Division, Ministry of Health and Family Welfare, 2019 | 60 | 68 | 84 | WHO recommends minimum threshold of 44.5 healthcare workers per 10,000 population to achieve Universal Health Coverage (UHC). High-performing health systems in Europe maintain ratios of 80-100 per 10,000. Countries like Norway and Switzerland demonstrate best practices at 100+. |
| Out-of-pocket health expenditure (% of monthly per capita consumption) | 37.5 | Department of Health and Family Welfare, Government of Haryana, 2021-22 | 20 | < 16 | < 10 | WHO considers health expenditure "catastrophic" when it exceeds 10% of household income. SDG 3.8 aims for UHC with financial risk protection. Countries with universal health coverage, like UK, Germany, and Japan maintain OOP below 5% of household spending. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--------------------------------------|----------|--|-------------|-------------|-------------|--|
| Public health expenditure (% of GDP) | 0.77 | Performance Audit on Public Health Infrastructure and Management of Health Services, 2022-23 | 2.5 | 3 | 5 | India's National Health Policy 2017 targets increasing public health expenditure to 2.5% of GDP by 2025. WHO recommends a minimum 5% of GDP for achieving UHC. OECD countries average 7.6% of GDP on public health spending. |

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

- Gradual health improvements through existing programmes
- Incremental progress insufficient to meet evolving healthcare demands
- Limited technological integration in healthcare delivery
- Persistent gaps in rural and underserved areas
- Continuing workforce shortages despite modest investments
- Marginal gains in nutrition indicators and NCD management

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

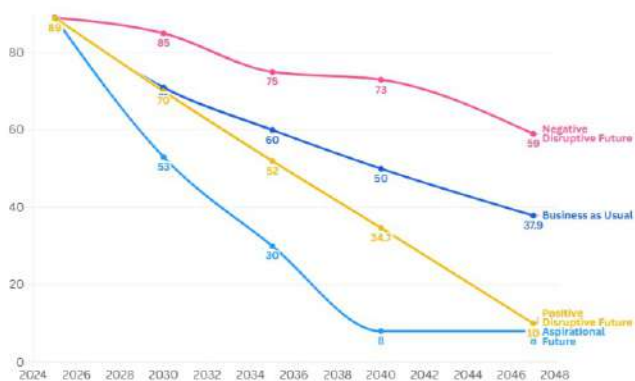
- Transformative digital health ecosystem with AI and telemedicine
- Strategic public-private partnerships driving healthcare innovation
- Democratised access to specialised care through technology
- Data-driven preventive healthcare and early intervention
- Precision medicine approaches tailored to population needs
- Integrated health and nutrition platforms addressing root causes

NEGATIVE DISRUPTIVE FUTURE (RISKS)

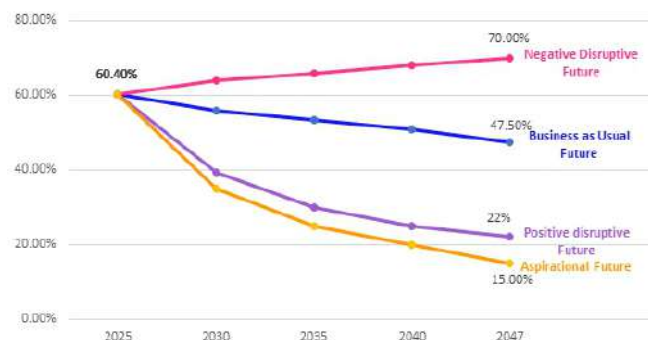
- Intensified health challenges from climate change and antimicrobial resistance
- Deepening healthcare disparities across socioeconomic groups
- Overwhelming burden of NCDs exceeding treatment capacity
- Critical workforce shortages compromising service delivery
- Inadequate infrastructure failing to meet population needs
- Resource constraints limiting essential health services

ASPIRATIONAL FUTURE

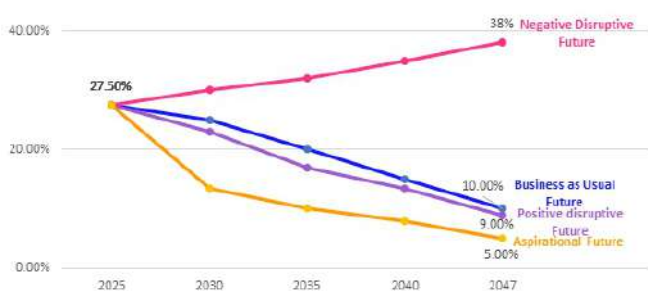
- Universal access to quality healthcare as a fundamental right
- Health equity achieved through targeted interventions
- Comprehensive health literacy and preventive care culture
- Zero preventable maternal and child deaths
- Complete elimination of malnutrition and micronutrient deficiencies
- Robust health system resilience against emerging threats



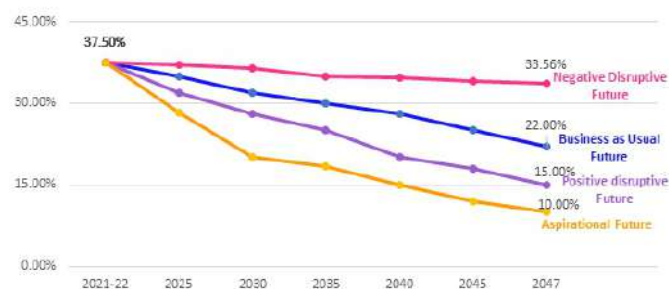
Graph 19 (a): Maternal Mortality Ratio (per 1,00,000 live births)



Graph 19 (b): Prevalence of Anaemia in Women (15-49 years)



Graph 19 (c): Prevalence of Stunting in Children Under 5 Years



Graph 19 (d): Out-of-Pocket Health Expenditure (% of Monthly Per Capita Consumption)

HOW WILL WE REACH THERE?

Translating Haryana's health and nutrition vision into reality demands strategic action guided by evidence-based interventions. The path forward requires addressing systemic barriers through targeted solutions that leverage technological innovation, policy reforms, multisectoral partnerships, and community engagement. By diagnosing root causes of persistent challenges in nutrition deficiencies, NCDs, healthcare access, and gender disparities, we can implement transformative approaches that yield measurable impacts. This section outlines critical issues and their corresponding intervention pathways, establishing a comprehensive roadmap to bridge current gaps and achieve Haryana's ambitious health and nutrition targets by 2047.

Issues

- 🔍 Nutritional Challenges - Malnutrition and Anaemia in Children, Pregnant Women and Adolescents
- 🔍 Rising NCDs - Increasing Cases in the Population
- 🔍 Digital Transformation in Healthcare - Shifting Services from Manual to Digital Platforms
- 🔍 Gender Disparities - Low Sex Ratios, Crime against Women and Children

- 🔍 Healthcare Access Transformation - Transitioning from Treatment-Centric to Prevention-Focused Services
- 🔍 Resilient Health Systems - Strengthening for Pandemic Management, Environmental Hazards and Sudden Disease Outbreaks

ISSUE 1: NUTRITION CHALLENGES

Despite progress in reducing childhood stunting and wasting, Haryana continues to face critical nutrition challenges, particularly persistent anaemia among women and children. While anaemia prevalence has marginally decreased from 62.7% to 60.4% among women aged 15-49 years,²⁸ nine districts have shown concerning increases²⁹. This silent epidemic demands targeted interventions that address nutritional deficiencies while recognising regional variations and vulnerable populations requiring immediate attention.

Current Status³⁰

- ✔ 27.5% of children under 5 years are stunted (2020-21)
- ✔ 15.1% of women have a Body Mass Index (BMI) below normal (2020-21)
- ✔ Occurrence of anaemia across different age groups (2020-21):
 - Children aged 6-59 months:- 70.4%
 - Pregnant women aged 15-49 years:- 56.5%
 - Women aged 15-19 years:- 62.3%
 - Men aged 15-19 years:- 29.9%
- ✔ Under ICDS in Haryana, Pregnant & Lactating Mothers receive nutritional support, ensuring better maternal and child health
- ✔ 20,350 Accredited Social Health Activists (ASHAs) engaged under NHM - for every 1,000 rural and 2,000 urban slum population in the state. ASHA workers actively promote balanced diets rich in iron, folic acid, and essential nutrients, encouraging the intake of leafy vegetables, pulses, and fruits
- ✔ Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) ensures free antenatal check-ups on the 9th of every month, focusing on early detection of high-risk pregnancies in Haryana. Including three mandatory checks—Haemoglobin test, Blood Pressure monitoring, and Urine test—help identify anaemia, hypertension, and gestational diabetes, ensuring safer pregnancies
- ✔ Bakri Balloon technology initiative for managing postpartum haemorrhage (PPH) in Haryana
- ✔ Haryana's Millet push: INR 27 crore allocated in FY 2024-25 and integration into Mid Day Meal (MDM)

Factors Influencing the Issue

- **Policy Implementation:** Effectiveness of nutrition programmes depends on implementation quality, monitoring mechanisms, and coordination across departments
- **Socioeconomic Determinants:** Income levels, education, and purchasing power directly impact access to diverse, nutritious foods

- **Cultural Practices:** Traditional dietary habits, food taboos, and gender-based food distribution within households affect nutritional intake
- **Agricultural Systems:** Food production methods, crop diversity, and sustainability of farming practices influence food security and nutrient availability
- **Infrastructure:** Access to clean water, sanitation facilities, and healthcare services impacts nutritional outcomes and prevents malabsorption issues
- **Climate Variability:** Weather patterns affect agricultural productivity, food prices, and consequently, household food security and diversity

Impacts of the Issue

Direct Impact

- Increase in low birth weight babies affecting child development
- Poor maternal and child health outcomes
- Improved health through fortified food products
- Better nutrition through the availability of natural/organic produce

Indirect Impact

- Healthcare system strain, increased expenditure, and reduced productivity
- Perpetuated poverty cycles and limited social mobility
- Reduced healthcare costs and enhanced community health outcomes
- Improved food security and agricultural sustainability

Global Learnings

Global Best Practices³¹

Mexico's ESIAN Strategy for Combatting Anaemia and Malnutrition: Mexico's ESIAN (Estrategia Integral de Atención a la Nutrición), led by the Ministry of Health with UNICEF and World Bank support, is a nationally scaled strategy targeting malnutrition and anaemia in pregnant women and young children. Originating under the Prospera cash transfer programme, it integrates micronutrient supplementation, fortified foods, and frontline worker training.

Disruptive Technologies - Child Growth Monitor: Revolutionising Nutritional Assessment

A German non-profit has introduced an app utilising Hyperspectral Sensor Imaging (HSI) for precise measurements. This cloud-based tool employs a small 3D infrared sensor to capture a child's height, body volume, weight ratio, and head and upper arm circumference to the millimetre. The app then scans and analyses this data using AI, accurately assessing the child's nutritional status. By categorising children as malnourished or healthy, this innovative solution aids in early intervention and targeted nutritional support, potentially transforming child health outcomes globally.³²

Possible Pathways

Short-Term Pathway (2030)

Strengthen Nutrition Monitoring Systems

- Integrate Poshan Tracker with RCH Portal for real-time data and link funding to nutrition outcomes (e.g. allocate resources/incentives based on reductions in stunting/anaemia)
- Train all frontline health workers in digital data entry and usage

Institutionalise Nutrition Education

- Make nutrition education mandatory in school curricula
- Develop interactive modules and train teachers for effective delivery

Ensure Anaemia-Free India

- Achieve 100% iron-folic acid coverage under the AMB Scheme
- Counselling by ASHAs for adolescent girls, pregnant/lactating women, and children (6-14 years) on iron-rich diets including leafy vegetables, pulses, and fruits
- Compliance tracking by ASHA and Multi Purpose Health Worker (MPHW) (F)
- Strengthening platforms like Village Health & Nutrition Day (VHND)/Urban Health & Nutrition Day (UHND), Village Health, Sanitation & Nutrition Committees (VHSNCs), and Mahila Arogya Samiti (MAS) by engaging PRIs and ULBs
- Promote Behaviour Change Communication (BCC) on healthy diets, hygiene, and sanitation
- Rolling out of “Garbh Sanskar” (Ayurveda-based antenatal care) at government hospitals and AAMs
- Promote immunity boosters like Swarna Prashan through AYUSH outreach in schools and Anganwadis
- Fix supply chain gaps and enforce mandatory school screenings

Enable Digital Self-Screening

- Launch a mobile app for anaemia and malnutrition self-assessment

Long-Term Pathway (2047)

Institutionalise Preventive Family Healthcare

- Mandate annual health check-ups for all families
- Promote proactive health management through awareness drives

Build State-Level Nutrition Planning Capacity

- Conduct annual workshops for health officials, nutritionists, and policymakers
- Develop State Nutrition Budgets aligned with national health targets
- Monitor implementation and revise plans based on health indicators

Boost Investment in Nutrition Innovation

- Increase funding for nutrition-focused research and tech adoption
- Foster public-private partnerships to scale impactful models
- Support pilots and rapid deployment of successful interventions
- Funds allocated for diets may be utilised by providing pre-cooked/semi-cooked protein-rich foods by involving farmers’ cooperatives like Vita/Hafed, etc.
- Develop Herbal Gardens in schools, PHCs, and Gram Panchayat land to foster community nutrition awareness

Advance Nutrition through Legislative Action

- Enforce policies promoting agroecological farming practices
- Mandate food waste reduction measures across sectors
- Establish a legal framework ensuring equitable access to nutritious food for all
- The MDM, maternal and child diets should target protein deficiency
- Introduce policies that incentivise local production of nutritious and traditional foods, supporting farmer livelihoods and rural economies.

Short-Term Pathway (2030)

- Integrate referral linkages to the nearest health services

Fortify Nutritional Support Programmes

- Enrich MDMs and ICDS rations with iron, folic acid, and micronutrients
- Fast-track the Food Fortification programme and introduce local cuisine in MDM
- Collaborate with local women's SHGs and parent associations to develop and implement community-based nutrition initiatives, empowering women in food preparation and dietary choices

Expand Diagnostic Access

- Equip PHCs, schools, and Anganwadis with portable haemoglobin metres
- Ensure annual anaemia testing for all children and pregnant women

ISSUE 2: RISING NON-COMMUNICABLE DISEASES

Haryana faces an alarming rise in NCDs, with conditions like ischemic heart disease, COPD, and Diabetes Mellitus Type 2 being major contributors of DALYs.³³ NCDs contribute to 60.99% of DALYs. Hypertension affects 26.2% of urban and 24.6% of rural men³⁴, while obesity rates have surged significantly—from 21.0% to 33.1% for women and from 20.0% to 28.3% for men between 2015-16 and 2020-21³⁵. This epidemiological transition demands urgent action through preventive, promotive, and curative approaches to mitigate the growing NCD burden.

Current Status

- ✔ NCDs now make up nearly 59% of Haryana's total disease burden, with ischaemic heart disease and COPD leading causes of death and disability.³⁶
- ✔ 11.9% of women and 13.5% of men have high blood sugar levels (2020-21)³⁷
- ✔ 21% of women and 25.1% of men have elevated blood pressure (2020-21)³⁸
- ✔ Obesity increased from 21.0% to 33.1% for women and 20.0% to 28.3% for men (2015-16 to 2020-21)³⁹
- ✔ 2.5% of women and 29.1% of men use tobacco products; 0.3% of women and 16.1% of men consume alcohol⁴⁰
- ✔ NIROGI Haryana: Launched in November 2022 to offer biannual comprehensive health checkups to the Antyodaya population. Disease diagnoses include: Anaemia (2.84 lakh), Hypertension (1.19 lakh), Diabetes (93,719), Cardiac (6,231), TB (3,450), Carcinoma (1,138)⁴¹
- ✔ Emerging concerns of stress, anxiety, and depression are increasingly being reported alongside NCDs, especially among working-age adults in urban and peri-urban areas, with limited mental health services at the primary care level.

Factors Influencing the Issue

- **Lifestyle Changes:** Sedentary behaviours, reduced physical activity, and increasing screen time contribute significantly to metabolic disorders
- **Dietary Transition:** Shift toward processed foods high in salt, sugar, and unhealthy fats, replacing traditional nutritionally balanced diets
- **Tobacco and Alcohol Use:** 29.1% of men use tobacco products and 16.1% consume alcohol, increasing NCD risk substantially⁴²
- **Environmental Factors:** Air pollution, water contamination, and exposure to chemicals amplify NCD susceptibility
- **Healthcare System Capacity:** Limited NCD screening, early detection, and management services at the primary care level
- **Public Awareness:** Insufficient knowledge about NCD prevention and risk reduction strategies among general population
- **Economic Impact:** A two-way relationship between NCDs and poverty, where each exacerbates the other
- **Psychosocial Factors:** Urban stress, social isolation, and work-life imbalance contribute to rising mental health conditions like depression and anxiety, which have a bidirectional relationship with NCDs like hypertension and diabetes.

Impacts of the Issue

Direct Impact

- Increased burden of chronic diseases requiring ongoing management
- Greater awareness of healthy foods and physical activities
- Expanded alternative medicine options for NCD control

Indirect Impact

- Higher healthcare demand, rising DALYs, and premature mortality
- Improved quality of life, enhanced immunity, and better mental well-being
- More personalised treatment and optimised healthcare utilisation

Global Learnings

Global Best Practice: Chile's Front-of-Package Labelling & Marketing Restrictions:⁴³

Chile's phased food labelling law mandates black stop-sign warnings on packaged foods high in sugar, salt, fats, or calories, empowering informed consumer choices. Coupled with bans on marketing to children and unhealthy school foods, it targets lifestyle-related NCDs. Since 2016, the policy has driven industry reformulation and healthier consumer behaviour.

Disruptive Technologies - Leveraging Predictive Analytics for Disease Management⁴⁴

A growing number of individuals are undergoing annual health scans that generate over 200 gigabytes of personal biological data. This shift towards a new model of healthcare, where diseases are detected at their earliest molecular signals through image-scanning the body in full to identify cardiovascular issues, early-stage cancers, metabolic changes and neurodegenerative signs. This is what full-diagnostic uploads are now capable of doing. Advanced platforms can analyse



the body's microbiome in unprecedented ways and can make recommendations on which foods support the person's body's optimal functions and which undermine it, your nutrition by data, not trends. This principle is being applied to dermatological care—the newest biological tools can identify ageing cells and remove them before they cause inflammation, skin damage or internal decline. These models are making healthcare personal, predictive and proactive, helping individuals lead longer, healthier lives, not through medication but by anticipating and pre-empting health challenges.

Possible Pathways

Short-Term Pathway (2030)

Regulate Unhealthy Food Consumption

- Limit salt and saturated fats in packaged foods
- Require clear front-of-pack labels
- Penalise non-compliant companies
- Enforce the FSSAI Act (2006) against adulterated food/drinks

Digitise Preventive Healthcare

- Link lifestyle apps with health portals
- Send tips, reminders, and alerts via SMS

Expand NCD Services in Communities

- Set up NCD units at health centres
- Early screening of high-risk groups via AAMs
- Follow-up of cases by ASHA and MPH (F)
- Provide screenings, counselling, and early care
- Screen People Living with HIV (PLHIV) for cervical cancer with follow-ups
- Integrate mental health services at all AAMs and PHCs
- Train ASHAs, MPHs, and school counsellors to identify early signs of mental distress
- Set up district-level mental health helplines

Run Behaviour Change Campaigns (BCCs)

- Promote fitness, nutrition, and addiction-free living
- Use schools, workplaces, and social media
- Promote yoga, naturopathy, and community wellness
- Awareness of organic food consumption through BCCs
- Promote mental health awareness, reduce stigma, and encourage early help-seeking
- Include mental well-being and stress management in BCCs, recognising their bidirectional relationship with NCDs

Promote Health-Friendly Urban Planning

- Mandate paths, cycling lanes, and green spaces
- Encourage active, safe public spaces
- Ensure safe, hygienic, and secure housing conditions, particularly in low-income and peri-urban areas

Short-Term Pathway (2030)

- Ensure public spaces are safe and accessible for all age groups and abilities, encouraging physical activity and social interaction. This includes planning for easily accessible elder care and childcare facilities to support working families and address demographic shifts.

Create NCD Centres of Excellence

- Build units for heart, diabetes, and lifestyle care, with provider payment reform (e.g. bundled or performance-based payments tied to patient outcomes)
- Train doctors and drive research

Boost Preventive Wellness Access

- Open more yoga and wellness centres
- Promote healthy habits at the community level
- Organise regular sports events and fitness drives at community, school, and Resident Welfare Association (RWA) levels to foster physical activity, teamwork, and mental well-being

Long-Term Pathway (2047)

Create a Dedicated NCD Prevention Fund

- Set up a long-term fund within the state budget
- Ensure annual allocation for screening, treatment, and awareness
- Link disbursement to performance metrics
- Progressively implement incentive and outcome-linked compensation models for public sector doctors and healthcare teams, using the existing flexi-fund mechanisms under PM-JAY (Ayushman Bharat)
- Adopt a strategic purchasing approach, aligning PM-JAY reimbursements with a structured performance framework
- Explore mechanisms to provide financial assistance for NCD management to vulnerable families through existing social security schemes

Strengthen Digital Health Infrastructure

- Implement centralised electronic health records in all public facilities
- Enable real-time data access for doctors and telemedicine
- Automate tracking of patient outcomes

Establish State-Level Research Hubs

- Build research consortia with medical experts and policymakers
- Design tailored interventions and therapies for high-risk groups
- Pilot precision nutrition and lifestyle programmes

Expand Health Education & Outreach

- Add NCD modules to school curricula
- Launch regular health screenings at workplaces
- Conduct monthly community health camps and public campaigns

Use AI for Early Detection & Communication

- Deploy AI tools in PHCs and Anganwadis for real-time anaemia and malnutrition screening
- Launch AI chatbots and apps for personalised health messaging

ISSUE 3: DIGITAL TRANSFORMATION IN HEALTHCARE

Haryana's healthcare sector is experiencing a digital revolution, exemplified by initiatives like eSanjeevaniOPD, which provided 367,276 teleconsultations by April 2024, and the Swasth Haryana mobile app for OPD registrations⁴⁵. Despite these advancements, significant digital divides persist—only 46.21 per 100 rural residents are digital subscribers compared to 105.65 in urban areas⁴⁶. Bridging this gap is essential to ensure equitable access to transformative healthcare technologies and realise their full potential.

Current Status

- ✔ "eSanjeevaniOPD" initiated in Haryana since May 2020, with 3,67,276 consultations by April 2024⁴⁷
- ✔ "Swasth Haryana" mobile app launched in 2021 for OPD registration in 55 public health facilities⁴⁸
- ✔ AI technology implemented for TB treatment in government-run health facilities
- ✔ **Significant digital divide:** 46.21 per 100 rural population are digital subscribers versus 105.65 in urban areas⁴⁹
- ✔ Haryana's "Swasth Haryana App" linked to the PPP database ensures targeting based on family vulnerability scores
- ✔ "Project Charaka" introduced Tele-health Kiosks in Jhajjar district offering free vital testing, virtual consultation and advanced diagnosis

Factors Influencing the Issue

- **Technological Infrastructure:** Availability of reliable internet connectivity, hardware, and digital platforms determines adoption rates
- **Digital Literacy:** Skills and comfort with technology among both providers and patients impact utilisation effectiveness
- **Rural-Urban Healthcare Divide:** Uneven distribution of health cadre professionals and infrastructure demand for digital solutions in rural areas
- **Policy Framework:** Regulatory environment for telehealth, data privacy, and digital health standards shapes implementation
- **Healthcare Workforce Readiness:** Training and adaptability of health professionals to integrate digital tools into care delivery
- **Interoperability:** Capacity for seamless data exchange between different health information systems and platforms
- **Resource Allocation:** Investments in digital health infrastructure, maintenance, and upgrades across geographic areas
- **Public Trust:** Confidence in digital health systems regarding privacy, security, and quality of virtual care services

Impacts of the Issue

Direct Impact

- Provision of real-time data for tracking disease trends and managing outbreaks

Indirect Impact

- Optimised resource allocation and improved patient satisfaction

Direct Impact

- Enhanced efficiency and transparency through reduced human error
- Better disease surveillance and outbreak prediction
- AI-enabled diagnostic and treatment solutions

Indirect Impact

- Earlier intervention and improved containment of health threats
- Improved accuracy, enhanced patient safety, and reduced medical errors

Global Learnings

Global Best Practice: Estonia's Nationwide e-Health Transformation:⁵⁰

Estonia's e-Health ecosystem, anchored by the Estonian Health Information System (EHIS) and X-Road data exchange, enables secure, real-time access to electronic health records nationwide. Patients and providers benefit from seamless digital services like e-prescriptions, which cover 99% of all prescriptions, along with telemedicine and AI-powered analytics. This citizen-centric infrastructure has positioned Estonia as a global leader in efficient, accessible digital healthcare.

Disruptive Technologies - Advancing Radiology Operations Through Virtual Collaboration

The continued adoption of radiology operations command centres exemplifies a transformative shift in healthcare. This cloud-based hub-and-spoke model facilitates virtual over-the-shoulder support, connecting expert imaging technologists with their counterparts at remote sites in real-time, even as patients undergo scans. Similarly, real-time virtual collaboration in ultrasound extends specialist care, enabling physicians to communicate remotely with their teams and patients across various settings, including hospitals, clinics, or remote satellite offices. By leveraging virtual collaboration, healthcare systems can democratise expertise, ensuring a consistent standard of care regardless of geographical location.⁵¹

Possible Pathways

Short-Term Pathway (2030)

Ecosystem of Digital Convergence

- Strengthen the ecosystem of digital convergence (PPP + e-Sanjeevani + RCH + Poshan Tracker)
- Ensure every citizen has an Ayushman Bharat Health Account ID (ABHA ID), within the Ayushman Bharat Digital Mission (ABDM), linked to the National Health Registry

Long-Term Pathway (2047)

Standardise Healthcare Data Interoperability

- Mandate uniform data formats, APIs, and secure sharing protocols across systems

Fund Digital Health Expansion

- Allocate budget for telehealth, AI diagnostics, and Electronic Health Record (EHR) adoption
- Offer tax incentives for private sector investments

Short-Term Pathway (2030)

- Expand AYUSH teleconsultation services through e-Sanjeevani and ABHA platforms

Standardise Telemedicine & AI Integration

- Set clear telemedicine regulations and privacy norms
- Integrate AI tools for remote diagnosis and decision support

Fund Rural Telemedicine Hubs

- Explore private sector investment, and launch pilot hubs in underserved areas equipped with digital tools and trained staff, with reimbursements based on service utilisation and quality (e.g., teleconsultation follow-ups), ensuring equitable access for all families

Train Healthcare Workers in Digital Tools

- Run mandatory digital literacy programmes
- Offer hands-on training in telemedicine, AI, and remote monitoring

Implement Statewide Electronic Health Records

- Establish interoperable EHRs across all health facilities
- Enable seamless data sharing between public and private providers

Improve Connectivity in Health Facilities

- Expand broadband and 5G in PHCs and clinics
- Prioritise rural and underserved locations

Strengthening Geriatric Care Infrastructure

- Prioritise the development of specialised Geriatric Health Units at district hospitals and primary health centres

Long-Term Pathway (2047)

Integrate Digital Health in Education

- Add courses on AI, telemedicine ethics, and health informatics to medical and nursing curricula
- Ensure a future-ready, digitally skilled healthcare workforce
- Develop digital literacy programmes not only for healthcare workers but also for elderly citizens and rural populations to ensure they can fully access and benefit from digital health services, fostering social inclusion and supporting their participation in the care economy where applicable.

Leverage AI for Predictive Healthcare

- Implement ML models for early detection and personalised treatment plans
- Use AI for risk stratification in healthcare facilities
- Develop AI-powered tools that can identify families at risk of digital exclusion and proactively offer support and training, ensuring no family is left behind in the digital transformation.

Build a Robust Digital Health Infrastructure

- Invest in cloud-based health data systems and 5G telemedicine platforms
- Prioritise cybersecurity for secure data exchange and remote services

Elderly Health Insurance and Preventive Care

- Comprehensive Elderly Health Insurance and Wellness Scheme should be designed to focus on preventive screenings, early detection of age-related illnesses, and affordable rehabilitation programmes.

ISSUE 4: GENDER DISPARITIES IN HEALTHCARE AND NUTRITION

Gender inequities in Haryana's healthcare system are evident through critical indicators—maternal mortality ratio stands at 89 per 100,000 live births⁵², sex ratio at birth remains low at 910 females per 1,000 males,⁵³ and anaemia prevalence is significantly higher among females (60.4%) compared to males (29.9%)⁵⁴. These disparities stem from deeply rooted social norms and structural barriers that limit women's healthcare access, decision-making power, and nutritional status, requiring comprehensive gender-responsive interventions.

Current Status

- ✔ MMR stands at 89 per 100,000 live births (2020-22)⁵⁵
- ✔ Sex ratio at birth is 910 females per 1,000 males (December 2024)⁵⁶
- ✔ Female literacy rate (65.94%) significantly impacts health awareness and outcomes⁵⁷
- ✔ Higher anaemia rates among females (60.4%) compared to males (29.9%)⁵⁸
- ✔ 12.5% of women (surveyed at age 20-24) were married before age 18⁵⁹
- ✔ “Nari Shakti Clinics” initiative being piloted in ULBs to offer women-specific screenings and counselling

Factors Influencing the Issue

- **Social Determinants:** Gender norms, educational attainment, and economic empowerment affect women's health-seeking behaviours
- **Decision-Making Autonomy:** Limited control over household resources and personal healthcare decisions restricts access to services
- **Health System Responsiveness:** Availability of female healthcare providers, gender-sensitive facilities, and women-focused services
- **Nutritional Practices:** Intra-household food distribution patterns often prioritise male members over females
- **Reproductive Health Awareness:** Knowledge about maternal health, family planning, and nutritional needs during pregnancy
- **Mobility Constraints:** Physical access limitations and transportation barriers affecting women's ability to reach healthcare facilities
- **Legislative Protections:** Implementation of policies that safeguard women's health rights and ensure gender-equitable services

Impacts of the Issue

| Direct Impact | Indirect Impact |
|---|---|
| <ul style="list-style-type: none"> • Improved acceptance of girl children in families • Higher maternal morbidity and mortality • Limited access to nutrition and healthcare for women and girls • Restricted decision-making power in health-related choices | <ul style="list-style-type: none"> • Greater gender equality and expanded opportunities for women • Reduced economic productivity and increased healthcare burden • Intergenerational effects on child health and development • Delayed care-seeking behaviour and poorer health outcomes |

Global Learnings

Global Best Practice: Nepal's "Suaahara II" Multi-Sector Nutrition Programme.⁶⁰

Nepal's "Suaahara II" Multi-Sector Nutrition Programme:

Nepal's "Suaahara II" is a multi-sectoral nutrition programme addressing gender disparities in maternal and child health through a life-cycle approach. It targets women and girls with integrated health, WASH, and agriculture services while promoting gender-equitable decision-making in food and healthcare. Community campaigns challenge harmful norms like preferential feeding of boys and deprioritising girls' nutrition.

Disruptive Technologies - Tackling Postpartum Haemorrhage: Innovations in Blood Loss Measurement

Postpartum haemorrhage remains a significant global health challenge, with approximately 70,000 women worldwide succumbing to this condition annually, making it a leading cause of maternal mortality. Defined as bleeding exceeding 500 millilitres within 24 hours of childbirth, it affects an estimated 14 million women each year, yet nearly half of the cases go undetected. A groundbreaking study conducted in 80 hospitals across four African countries introduced a simple yet effective solution: the use of a "drape" device to collect and measure postpartum blood loss accurately. This innovation, coupled with a bundle of treatment options endorsed by the WHO, resulted in a remarkable 60% reduction in the incidence of severe bleeding among women post-delivery. Furthermore, the study observed a corresponding decrease in maternal deaths attributed to haemorrhage.⁶¹

Possible Pathways

Short-Term Pathway (2030)

Integrate Gender-Sensitive Education

- Embed gender equity themes in school syllabi
- Train teachers through gender-focused modules
- Include gender awareness in community outreach, and set gender-sensitive performance targets (e.g. maternal health coverage) in provider contracts to improve accountability for women's health.

Strengthen Gender Budgeting Mechanisms

- Conduct regular capacity-building workshops

Long-Term Pathway (2047)

Invest in Impact Evaluation

- Fund long-term studies to assess gender interventions
- Use data to guide policy updates and targeted spending

Strengthen Institutional Capacity

- Train government, CSOs, and community institutions
- Allocate resources and technical support for implementation

Short-Term Pathway (2030)

- Implement monitoring frameworks for expenditures
- Mandate gender audits across departments

Reform Protection Laws

- Streamline legal processes for faster justice
- Establish fast-track courts for gender-based violence
- Use gender-neutral language in policies
- Provide legal aid and counselling services for women and girls facing health-related discrimination or violence, ensuring their safety and access to justice

Track Gender-Focused Fund Utilisation

- Establish real-time expenditure tracking systems
- Conduct annual performance audits

Expand Survivor Support Services

- Strengthen 24/7 crisis hotlines
- Ensure the availability of functional shelters
- Integrate legal aid clinics at one-stop centres for women and children in urban designs

Use Technology for Real-Time Reporting

- Launch mobile applications for violence reporting
- Deploy AI dashboards to monitor service access

Improve Public Safety Infrastructure

- Install CCTV in public spaces
- Expand street lighting in vulnerable areas
- Set up emergency call boxes at high-risk locations

Enforce Gender-Sensitive Urban Planning

- Mandate zoning for safe public toilets
- Provide dedicated childcare centres
- Ensure safe spaces

Long-Term Pathway (2047)

Enforce Comprehensive Legal Frameworks

- Address gender gaps, domestic violence, trafficking, and child protection
- Ensure strict law enforcement and access to justice

Develop Gender-Responsive Infrastructure

- Build safe housing and accessible transport
- Improve public safety and sanitation for vulnerable groups
- Formally recognise and support care work through policy and economic incentives, addressing the disproportionate burden on women and valuing their significant contribution to economic development.

Adopt Intersectional Approaches

- Consider ethnicity, disability, gender identity, and class
- Create inclusive policies for LGBTQIA+, minorities, and the disabled

Extend Beti Bachao, Beti Padhao

- Haryana's BBBP campaign can be extended into health domains via incentive-based schemes

ISSUE 5: HEALTHCARE ACCESS TRANSFORMATION - PREVENTION-FOCUSED APPROACHES

Haryana is gradually shifting from curative to preventive healthcare approaches, evidenced by the establishment of 2,722 HWCs⁶². This transformation is further supported by the allocation of INR 27 crore for millet promotion and the establishment of the Nutri-Cereals Research Station in Bhiwani⁶³. Accelerating this paradigm shift is essential to reduce disease burden, optimise healthcare resources, and improve population health outcomes.

Current Status

- ✔ All Urban PHCs upgraded to AAM, providing 12 comprehensive services⁶⁴
- ✔ 2,722 functional HWCs established across Haryana⁶⁵
- ✔ Regular yoga sessions conducted at all UPHCs
- ✔ 1,000 yoga schools (Yogashalas) opened across the state and linked to HWCs via preventive wellness drives every Sunday
- ✔ INR 27 crore allocated for the promotion of millets in the FY 2024 budget
- ✔ Kaithal's millet-based pilot showed a 20% decline in anaemia over six months
- ✔ Nutri-Cereals Research Station established at Gokalpura in Bhiwani district
- ✔ **Medical Education Expansion:** Significant rise in medical college seats to improve doctor-population ratio, with similar efforts underway for nursing and paramedical training
- ✔ Haryana has introduced financial incentives to encourage farmers to move beyond the wheat-paddy cycle, promoting the production of alternative food crops that offer affordability in the market
- ✔ **Upgraded District Hospitals:** All district hospitals have been upgraded to 200 beds, with enhanced facilities to support preventive care efforts
- ✔ **AYUSH Integration:** Over 1,000 AYUSH Medical Officers have been appointed and posted to both AYUSH and Health Department facilities
- ✔ **Public-Private Partnerships (PPP):** Free dialysis, CT/MRI scans, and interventional cardiology services like cardiac cath labs are being provided under PPP models across districts
- ✔ **Strengthening Preventive and Cancer Care:** Focus on preventive services in urban/peri-urban areas, cancer care centres in all districts, and population-level screenings through HWCs
- ✔ Tailored interventions being piloted under Aspirational Districts Programme

Factors Influencing the Issue

- **Health System Orientation:** Realignment of incentives, resources, and priorities toward preventive services
- **Workforce Development:** Training healthcare providers in preventive approaches and health promotion strategies
- **Community Engagement:** Public participation in wellness initiatives and preventive health behaviours
- **Financing Mechanisms:** Budget allocations that prioritise and sustain preventive health programmes
- **Traditional Knowledge Integration:** Incorporation of indigenous health practices like Ayurveda and yoga with modern medicine

- **Built Environment:** Urban planning and infrastructure that promote physical activity and healthy living
- **Food Systems:** Agricultural policies and nutrition interventions supporting healthy dietary patterns

Impacts of the Issue

Direct Impact

- Reduced disease incidence and improved quality of life
- Potential workforce challenges during transition without adequate resources
- Shift from curative to preventive paradigm

Indirect Impact

- Lower healthcare facility strain and improved access for underserved populations
- Possible decline in service quality and patient satisfaction
- Long-term cost savings and improved population health outcomes

Global Learnings

Global Best Practice: Denmark's Integrated Prevention-First Health Model:⁶⁶

Denmark's healthcare model exemplifies a shift from treatment to prevention through community-based "health houses" delivering localised primary care. Programmes like Tingbjerg Changing Diabetes promote healthy lifestyles via community-driven interventions. The system integrates technology, including EHRs and AI tools, to boost preventive care and patient participation, reducing dependence on hospitals.

Disruptive Technologies - Harnessing Big Data and Analytics for Disease Prevention

The ongoing technological revolution has led to the accumulation of vast amounts of healthcare data in recent years, presenting unprecedented opportunities for advancing disease prevention efforts. These massive datasets, often anonymised, hold the potential to unveil intricate medical patterns and trends in healthcare information technology. By analysing this wealth of data, scientists can uncover novel correlations between various factors such as demographics, ecology, economy, and population health conditions.⁶⁷

Possible Pathways

Short-Term Pathway (2030)

Launch Public Health Campaigns

- Use mass media, outreach, and digital tools
- Promote healthy lifestyles and early screenings

Decentralise Health Governance

- Empower PRIs, ULBs, and HWCs with financial and administrative control

Long-Term Pathway (2047)

Mandate Prevention-Focused Metrics in Quality Standards

- Include prevention indicators in healthcare assessments
- Link regulatory standards and accreditation to preventive outcomes

Short-Term Pathway (2030)

Develop Preventive Healthcare Financing Models

- Develop preventive financing models based on population health needs and evidence; formalise purchasing of preventive/traditional services through outcome-based contracts (e.g. funding validated Ayurveda/nutrition programmes tied to health impact)
- Engage policymakers, insurers, and the private sector

Expand Preventive Services through Partnerships

- Collaborate with employers, schools, and faith-based organisations
- Embed health programmes in everyday settings

Address Workforce Gaps in Public Health

- Launch recruitment and training initiatives
- Offer incentives for preventive care professionals
- Ensure deployment of qualified AYUSH doctors in all AAMs, which will be made available alongside modern medicine

Develop Personalised Mobile Health Apps

- Help users track behaviours and set health goals
- Enable reminders for screenings and check-ups

Strengthen Community Outreach and Health Centres

- Improve resources and staff training
- Expand mobile services for remote and underserved areas

Long-Term Pathway (2047)

Launch Fellowships in Preventive Medicine and Public Health

- Offer state-sponsored fellowships and certifications
- Build a skilled workforce for community health initiatives

Integration of AYUSH into AAMs/PHC/CHC

- Establishment of AYUSH wing in all PHCs/CHCs and District Hospitals
- Establish AYUSH Lifestyle Clinics at the district level for prevention and management of NCDs like diabetes and hypertension
- Establish state AYUSH Research and Training Institute to validate and promote Haryana's traditional and health knowledge

Ensure Continuous Professional Development

- Make ongoing training mandatory for healthcare providers
- Focus on preventive care, digital tools, and emerging risks

Create a National Health Data Ecosystem

- Enable secure, real-time data sharing on prevention outcomes
- Facilitate collaboration among researchers, clinicians, and policymakers

Advance Precision Medicine through Data Integration

- Use genetic and lifestyle data in routine screenings
- Deliver personalised preventive care and early interventions

ISSUE 6: RESILIENT HEALTH SYSTEMS FOR PANDEMIC MANAGEMENT

Haryana's experience with COVID-19 highlighted the imperative for resilient health systems capable of responding to emergencies while maintaining essential services. With 14,230 hospital beds⁶⁸, 148 ICDS projects⁶⁹, and 76.9% vaccination coverage among children aged 12-23 months⁷⁰, the state has foundational infrastructure but requires strategic enhancement to withstand future health threats, environmental hazards, and disease outbreaks without compromising routine healthcare delivery.

Current Status

- ✔ Hospital Infrastructure: 14,230 beds in government hospitals (2022)⁷¹
- ✔ 148 ICDS projects and 25,962 AWCs providing community-based services⁷²
- ✔ 76.9% of children aged 12-23 months fully vaccinated⁷³
- ✔ **National Viral Hepatitis Control Program (NVHCP):** Launched in 2018 to eliminate Hepatitis C by 2030; provides free screening and treatment for Hep B & C; Haryana awarded for best performance in 2022; key centres include PGIMS Rohtak and 26 treatment sites; in FY 2024–25, over 18 lakh screened, thousands treated, and nearly Six lakh pregnant women tested⁷⁴
- ✔ Limited emergency response capacity and integrated surveillance systems
- ✔ Challenges in coordination between the health, environment, and disaster management sectors
- ✔ Haryana is integrating health response into the State Disaster Management Authority SOPs

Factors Influencing the Issue

- **Surveillance Capacity:** Robust early warning systems and real-time data monitoring for threat detection
- **Emergency Response Protocols:** Clear governance structures and predefined roles during health emergencies
- **Supply Chain Resilience:** Secure access to essential medicines, vaccines, and equipment during crises
- **Healthcare Workforce Surge Capacity:** Ability to rapidly mobilise and deploy trained personnel
- **Intersectoral Coordination:** Functional mechanisms for collaboration across health, environment, and disaster management
- **Community Preparedness:** Public awareness and engagement in emergency response
- **Climate Adaptation:** Health system readiness for managing climate-sensitive diseases and extreme weather events

Impacts of the Issue

Direct Impact

- Reduced morbidity and mortality through rapid response systems
- Better mitigation of environmental health hazards
- Improved pandemic preparedness and management

Indirect Impact

- Enhanced government capacity to combat health emergencies
- Lower incidence of environmentally-related illnesses and improved community resilience
- Stronger public confidence in healthcare institutions and reduced economic disruption

Global Learnings

Global Best Practice: Norway's National Pandemic Preparedness Strategy:⁷⁵

Norway's 2023 National Pandemic Preparedness Strategy places resilience at the core of its health system, emphasising whole-of-government coordination and local readiness. It integrates climate-sensitive risk mapping, mandatory stockpiles, and data-sharing protocols. A standout feature is its "learning systems" approach, using past outbreak insights to inform future responses. The strategy links pandemic readiness with primary care and mental health, reflecting a shift from reactive to institutional preparedness.

Disruptive Technologies - Advancing Virus Detection: The Potential of DNA Motors

The development of a tiny DNA motor capable of detecting viruses represents a significant advancement in responding swiftly to emerging threats. The pioneering work has centred around creating a fully automated electronic sensor for real-time surveillance and tracing of airborne viruses. This breakthrough technology holds the promise of playing a pivotal role in the ongoing battle against infectious diseases. The envisioned product, resembling a smoke detector but designed to detect pathogens, could be deployed in key locations such as airports, schools, and crowded areas. Upon detection, individuals present in the vicinity could receive prompt notifications of potential exposure to the pathogen. Crucially, the system would generate real-time maps pinpointing areas where new airborne viruses are emerging and being detected, providing a vital window of opportunity for swift intervention to prevent further spread. This innovative approach, encapsulated in the Pandemic Early Alert System (FIP2023), offers hope for a more proactive and effective response to emerging health crises.⁷⁶

Possible Pathways

Short-Term Pathway (2030)

Develop Standardised Emergency Response Protocols

- Define clear roles for national and local agencies
- Ensure rapid, coordinated action during crises

Formalise Multi-Stakeholder Partnerships

- Sign MOUs with communities, NGOs, and global partners

Long-Term Pathway (2047)

Establish Interdepartmental Governance Committees

- Form national and state-level bodies
- Integrate health, environment, and disaster sectors
- Coordinate emergency response and resilience planning

Short-Term Pathway (2030)

- Create joint plans for disaster preparedness and relief

Train Healthcare Workers for Crisis Response

- Conduct mandatory training and prepare medical professionals for emergencies similar to peak pandemic
- Focus on infection control and emergency medical care
- Provide telemedicine training to all MPHWS (M/F), enabling them to coordinate with specialists at designated hubs for enhanced patient care

Use Real-Time Data for Outbreak Detection

- Set up data systems in hospitals and monitoring units
- Enable early detection and quick response to outbreaks

Expand Healthcare Surge Capacity

- Establish emergency units and stockpile key supplies
- Train rapid response teams for crisis deployment

Ensure Inclusive Emergency Healthcare Access

- Prioritise services for marginalised and vulnerable groups
- Guarantee access to care and vital information

Strengthen Biomedical Waste Management

- Enforce strict segregation and disposal protocols
- Minimise biohazard risks in healthcare settings

Long-Term Pathway (2047)

Develop Cross-Sectoral Partnerships

- Connect health agencies with urban planners and environmental experts
- Address air and water quality, housing, and food security
- Strengthen community health resilience

Launch National Workforce Training Programmes

- Provide certifications in disaster preparedness and epidemiology
- Train professionals on climate-related health risks
- Build a skilled crisis response workforce

Implement AI-Driven Predictive Systems

- Forecast outbreaks, pollution risks, and extreme weather impacts
- Support early intervention and resource allocation

Upgrade Health Infrastructure for Climate Resilience

- Use solar backup systems and flood-resistant structures
- Adopt sustainable water management practices
- Ensure uninterrupted services during crises

Embed Equity-Focused Funding Mechanisms

- Prioritise underserved and vulnerable communities
- Expand access to primary healthcare in high-risk areas
- Prioritise underserved and vulnerable communities, expanding access to primary healthcare in high-risk areas, and ensuring that emergency response plans include provisions for accessible childcare and elder care services during dislocations, supporting family resilience and well-being

BIG ACTIONS

1. Social Security 360° Plan

An all-encompassing safety net that unifies pensions for seniors, targeted worker insurance, easy-access disability benefits, and a robust childcare-eldercare system—delivered through a single digital platform. By investing in integrated family-support centres across districts, the government empowers women to pursue careers while ensuring every household has the protection and care it needs to thrive.

2. Health Rise 2047

Haryana envisions universal healthcare that provides free preventive and specialised services to all, supported by tech-driven medical facilities and mobile clinics, dramatically reducing maternal and child mortality statewide. It will leverage the PPP database for real-time risk targeting using the Family Guard dashboard.

3. Family Guard 2047

A next-generation governance tool that harnesses real-time data and AI-powered risk analysis to proactively identify and support at-risk families before crises escalate. This advanced monitoring and assistance network ensures no family in Haryana slips through the cracks, firmly cementing social equity in the era of rapid change. The state will link AI-powered dashboards to Anganwadi-level data inputs for early family health alerts.

WORKING GROUP - 3

Departments

- | | | |
|--|---|---|
| 1. Department of Health and Family Welfare | 2. Women & Child Development Department | 3. Department of Medical Education and Research |
| 4. Sports Department | 5. Department of Agriculture and Farmers Welfare | 6. Swarn Jayanti Haryana Institute for Fiscal Management |
| 7. United Nations Development Programme | 8. Haryana State Rural Livelihood Mission | 9. Directorate of Higher Education |
| 10. Haryana State Pollution Control Board | 11. Haryana State Health Systems Resource Centre | 12. Haryana Agro Industries Corporation Limited |
| 13. Department of Revenue & Disaster Management | | |

Timeline

26/09/2023



First meeting with the Member Secretary at the Health Services Department, Sector - 6, Panchkula, Haryana.

22/02/2024



First meeting with the subgroup at the New Haryana Civil Secretariat, Sector 17, Chandigarh

21/03/2024



Strategic Foresight Workshop at Hotel Mountview, Sector 10, Chandigarh.



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AGRICULTURE & ALLIED SECTORS, FOOD AND ENVIRONMENT



WHERE ARE WE?

Strengths

- Haryana has achieved high agricultural growth and leads in milk production
- Strong GSVA contribution; leading export contributor
- Advanced agri-tech adoption; extensive cold storage
- Guaranteed price support for over 24 crops
- 97% net area sown; high irrigation intensity
- Government initiatives like the Pradhan Mantri Fasal Bima Yojana (PMFBY) and "Mera Pani Meri Virasat" are promoting crop diversification and mitigating agricultural risks
- The productivity of major crops like rice, wheat, pulses, oilseeds, bajra and other crops are above the national average and are comparable to advanced countries in many arenas.
- Presence of robust and dynamic research infrastructure of agricultural universities with critical advancements in new frontiers of biofortified varieties, climate resilient technologies, resource conservation, biotechnological advancements along with scientific human resource base.

Areas of improvement

- Regulation of groundwater use and chemical inputs
- Improvement in policy frameworks and encourage land consolidation
- Support land holders better by lowering input costs and boosting tech accessibility
- Enhance post-harvest care; curb stubble burning and promote sustainable practices
- Address challenges of disguised unemployment, seasonal work, and low wages in agricultural labour.

Opportunities

- Upscale aquaculture operations; diversify horticulture crops
- Expand natural/organic farming; promote climate-smart farming; develop green certifications
- Boost micro-irrigation coverage; improve soil health
- Increase tech penetration; strengthen value chains
- Enhance agri-exports
- Utilise AI and automate farming processes
- Explore agri-tourism as a supplementary income source for farmers and rural communities

Threats

- Groundwater overextraction risk; pesticide overuse impact and soil salinity increase
- Climate change effects; air pollution escalation
- Rising production costs and market price volatility
- Inequality in tech access

WHERE DO WE WANT TO GO?



VISION

Haryana will **Future-Secure Agriculture and Food** by transforming itself into a global hub of sustainable, high-value agriculture, driven by innovation, empowered farmers, and climate-resilient systems, while ensuring economic prosperity, reduced agrarian dependency, and leadership in organic and horticultural markets and fostering diversified rural economic growth through new avenues like agri-tourism.



MISSION

With the aim to revolutionise its agrarian economy, Haryana will adopt the EEE Approach — Equitable, Eco-Friendly, and Experimental Farming by diversifying crops, adopting cutting-edge technology, and building efficient supply chains to quadruple farmer income in real-value terms, promote agro-industries, and transition 20% of farmland to organic/natural practices by 2047. We will empower smallholders, consolidate landholdings, and leverage national missions to create a future where farming is profitable, sustainable, and aspirational.

GOALS

- Percentage of GSVA in Agriculture & Allied Sectors to the total GSVA - > 7.2% (approximately)
- Agricultural productivity aims to shift away from water-intensive crops like paddy to promote sustainable and natural farming methods, encouraging a move toward high-value alternatives such as horticultural crops.
- Percentage of net area under natural/organic farming - > 20%
- Cold Storage Capacity (in '000 tonnes) - > 600
- Percentage of degraded land developed for farming activities - > 20%
- Compensate for the area shift from farm sector to non-farm sector through increase in productivity, sustainable crop diversification and technology intensive production process.

ASPIRATIONAL FUTURE

To ensure a prosperous, eco-conscious agricultural sector with enhanced income and livelihoods through optimised resource utilisation, which maximises yields and ensures enduring food security using advanced agricultural technologies to mitigate post-harvest losses and enhance sustainability. Rural economic growth is stimulated by guaranteed price support and farmer-friendly policies.

- The food crops like rice, wheat, millets, pulses and oilseeds; cash crops like cotton and sugarcane shall remain the core of agri-production process but with resource efficient technology paradigms and high productivity comparable to global standards.
- Establish world class agricultural education, research and extension infrastructure for the citizens, support public-funded technology generation and delivery as it is affordable to the farmers. Promote crops like maize, sugarcane and other crops to be the efficient source of green energies.

HOW WILL WE REACH THERE?

Climate Resilience & Environment: Enforce region-specific precision farming, net-zero GHG emission laws, and sustainable water use; use AI-satellite tools for climate monitoring, disaster forecasting, and pollution control.

Sustainable Agriculture Practices: Mandate organic certification and promote agroforestry, crop diversification, and soil testing; support training through digital platforms and build agro-ecological buffer zones.

Advanced Agri-Tech Integration: Promote AI-driven precision farming and IoT systems for equitable access; set up pilot farms, innovation hubs, and certification institutes in agri-robotics.

Supply Chain & Post-Harvest Management: Incentivise cold chain infrastructure, biodegradable packaging, and AI-based logistics; deploy smart warehouses, predictive analytics, and mobile post-harvest units.

Economic Viability & Market Adaptation: Provide subsidies for high-value crops, AI-backed price forecasting, and export support; create direct farm-to-market contracts and training in agri-business management.

Agrarian Reforms & New Markets: Simplify land leasing, secure tenancy rights, and strengthen Farmer Producer Organisations (FPOs); promote agritech incubation, blockchain-led traceability, and climate-smart trade ventures.

Focus on Allied and Non-farm Sectors: Diversifying Haryana's agricultural economy; focusing on Horticulture, Animal Husbandry, and Pisciculture is essential to buffer the direct impact of environmental and market forces on the income of farmers.

Advancing Agricultural Research and Technology for Food and Nutritional Security: Investment in R&D for the generation of technologies, technological adaptation and its delivery to every farmer and using the land to its capacities. The breakthrough in pulse crops, oilseed crops and cash crops like cotton through biotechnological tools for food as well as nutritional security and agrarian prosperity.

Strengthening Post-Harvest Infrastructure and Value-Added Agriculture: World-class infrastructure of storage, post-harvest handling and value addition; integration of farm enterprises for a viable and sustainable farming systems.

3 BIG ACTIONS

01 **Zero Burn, Green
Return Initiative**

03 **Sky Harvest 2047**

02 **Agri-Tech City & Smart
Storage Network**

INTRODUCTION

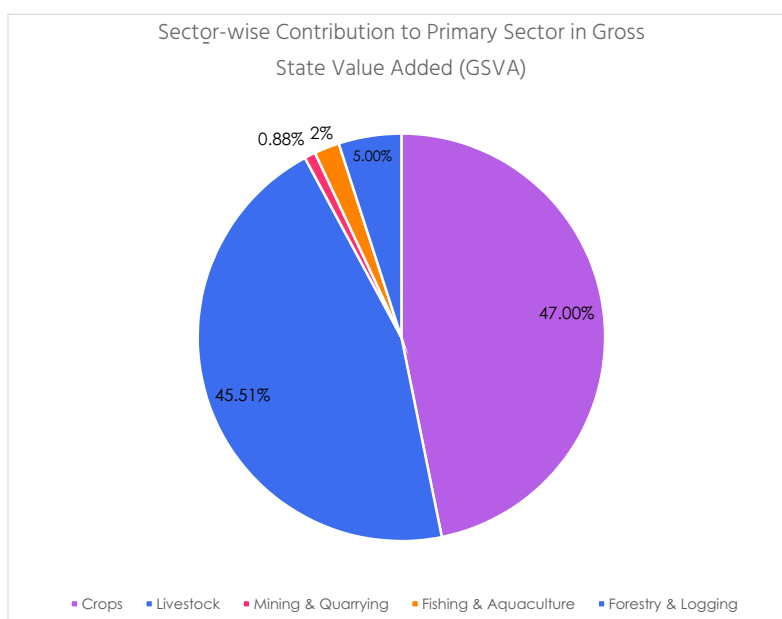
Haryana's agricultural landscape stands at a transformative crossroads. As the "Bread Basket of India," the state punches above its weight—contributing significantly to national food security despite occupying just 1.34%¹ of India's geographical area, with 35.84 lakh hectares² of cultivated land supporting nearly 30% of its workforce and generating 18% of the state economy.³ While the sector boasts impressive achievements—wheat yields reaching 6,177 kg/hectare,⁴ horticulture producing 68.43 lakh MT annually,⁵ and a thriving livestock sector with 122.20 lakh tonnes of milk production⁶—these gains are increasingly threatened by sustainability challenges that cannot be ignored. Critical issues, including severe groundwater depletion (135.74% extraction rate)⁷, soil health degradation by excessive chemical inputs and continued rigorous tillage from excessive chemical inputs (28,99,680 MT of fertilisers and 4,440.3 MT pesticides annually), climate change impacts, and fragmented landholdings (68.57% being small and marginal farmers)⁸, require immediate attention.

WHERE ARE WE?

Current Status

Agricultural Production and GSVA

- Agriculture & Allied Sectors: 17.9% contribution to GSVA (2024-25)⁹
- Agricultural growth rate: 8.1% in 2023- 24¹⁰
- Wheat yield: 6,180 kg/hectares (2024-25)¹¹
- Rice yield: 7,415 kg/hectares (2024-25)¹²



Graph 20: Sector-wise Contribution to Primary Sector in Gross State Value Added (GSVA)

(Source: Statistical Abstract of Haryana 2023-24)

Government Initiatives

- Multiple farmer benefit schemes – Har Khet Swasth Khet, Mera Pani Meri Virasat, Bhavantar Bharpayee Yojana, Direct Seeding of Rice, Crop Residue Management (CRM) Incentive
- Use of technology and linking of crop sown data with insurance, mandis, and girdawari records
- Advanced data collection and citizen service portals – Meri Fasal Mera Byora, e-Kshatipurti, e-Girdawari Mobile app
- Push towards sustainable agriculture through CRM, groundwater conservation, and promoting natural farming
- Policy paradigms supported by technology, innovations and entrepreneurship for their tangible impact and very high dividends across crops, cropping systems and farming systems.

Land Use and Irrigation

- Micro-irrigation coverage: 11.96% (2022)¹³
- Natural/Organic farmlands: 5,303 hectares of 66,05,000 hectares gross cultivated area¹⁴
- Net Area Sown: 3,585 thousand hectares (90.73%)¹⁵
- Irrigation intensity: 176.7%¹⁶

Horticulture

- Production: 68.43 lakh MT (2023-24)¹⁷
- Area: 4.12 lakh hectares (6.28% of gross cropped area)¹⁸
- Fruits: 0.70 lakh hectares producing 8.56 lakh MT¹⁹
- Vegetables: 3.35 lakh hectares producing 59.14 lakh Mt²⁰

Livestock and Dairy²¹

- Milk production: 122.20 lakh tonnes (2023-24)
- Per capita milk availability: 1,105 g/daily (2023-24)
- Cattle population: More than 20 lakh
- Total livestock population ≈90 lakh (cattle, buffalo, goat, sheep, pig, poultry)

Fisheries²²

- Area under fish farming: 23,317 hectares (from 58 hectares in 1966)
- Total fish production: 2.32 lakh metric tonnes (2024-25)
- Saline aquaculture area: 2,360 hectares producing 15,468 tonnes of fish/shrimp

Conservation of Flora and Fauna in Haryana

Protected Areas and In-Situ Conservation

- The state maintains two National Parks (Sultanpur and Kalesar), eight Wildlife Sanctuaries, and two Conservation Reserves covering approximately 303.92 square kilometres, which constitutes 0.69% of the state's geographical area.²³
- The largest protected area is Kalesar National Park, spanning 4682 hectares in the Shivalik foothills and supporting diverse wildlife including elephants, wild boar, sambhar, chital, and red jungle fowl.
- Sultanpur National Park, covering 142 hectares near Gurugram, serves as a crucial habitat for over 300 bird species including migratory waterfowl.²⁴
- Recent conservation efforts have expanded to include community-based conservation through the establishment of community reserves. In 2025, Haryana declared two new community reserves - the 144-

acre Chaudhariwali Community Reserve in Hisar and the 68-acre Shri Guru Jambheshwar Chinkara Community Reserve in Bhiwani²⁵

Ex-Situ Conservation and Specialised Breeding Programmes

- Haryana has developed several specialised breeding centres to support species conservation through ex-situ programmes.
- The Jatayu (Vulture) Conservation and Breeding Centre at Pinjore represents one of the most successful conservation initiatives, established in collaboration with the Bombay Natural History Society to save three critically endangered Gyps vulture species from extinction.²⁶
- The centre has successfully bred over 300 vultures since 2008, with release programmes initiated in 2015-16 to reintroduce captive-bred birds to the wild.²⁷
- The state operates multiple specialised breeding facilities including the Red Jungle Fowl breeding programme at Morni, which focuses on maintaining genetic purity of this ancestral species of domestic chickens.²⁸
- Additional facilities include the Peacock and Chinkara Conservation Breeding Centre at Jhabua in Rewari district, the Chinkara Breeding Centre at Kairu in Bhiwani, and the Elephant Rehabilitation Centre at Ban Santour in Yamunanagar.²⁹

FUTURES TRIANGLE (*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

The Futures Triangle provides a dynamic framework for understanding the complex forces shaping Haryana's agricultural landscape. It examines three critical dimensions: "Pushes of the Present" capturing current drivers of change, both positive (such as natural/organic farming initiatives and technological advances) and negative (including groundwater depletion and policy gaps); "Pulls of the Future" highlighting aspirational forces (like innovative technologies and guaranteed price supports) alongside potential risks (including rising costs and widening technological disparities); and "Weights of the Past" acknowledging historical factors that either enable progress (such as early conservation efforts) or create inertia (including entrenched unsustainable practices). This multidimensional analysis reveals the tension between competing forces and illuminates potential pathways as Haryana navigates toward a sustainable agricultural future. Understanding these interconnected forces is essential for developing effective interventions that can overcome barriers while leveraging existing momentum for positive transformation.

Pushes of the Present

Positive

Increased production of high-yield crops like wheat, rice and cotton owing to the adoption of modern agriculture practices

Significant budgetary allocation INR 8658.66 crore (in FY 2025-26) for agriculture & allied activities³⁰

Negative

Soil Degradation and declining nutrient-use efficiency due to high pesticide use (4,066 metric tonnes in FY 2020- 21)³¹, raising environmental concerns

Persistent **groundwater overexploitation** causing water scarcity and agricultural instability

Positive

5,303 hectares of certified **organic/natural farmland³²** promoting sustainable agriculture

Noticeable **diversification towards allied activities** like horticulture, floriculture, and animal husbandry, providing additional income sources and reducing dependency on traditional crops

Increasing integration of **advanced agricultural technologies in weather monitoring** improving efficiency and sustainability

Improvements in rural infrastructure, including better road connectivity and irrigation facilities, facilitating easier access to markets and resources and boosting agricultural productivity

Market-focused initiatives **bolstering farmer income** and agricultural sustainability

Structured State Environment Action Plan has been formalised for improved waste management, clean energy adoption, and sustainable agricultural practices

Pulls of the Future

Positive

Adoption of **progressive policies for renewable energy** and leveraging of the strong agricultural base to develop bioenergy can provide sustainable energy solutions and reduce dependency on conventional energy sources

Growing **emphasis on sustainable agricultural practices**, including efficient water use and reduced reliance on chemical fertilisers, can lead to long-term environmental benefits and increased productivity

Negative

Scattered small and marginal landholdings **limiting efficiency and modernisation**

Agricultural technologies contributing to **environmental risks through e-waste**

Crop Diversity Decline: Reduction in the cultivation of coarse cereals and pulses, leading to less crop diversity

Declining Total Factor Productivity threatening **economic viability and market adaptability**

Negative

Rising production costs are impeding technology adoption

Fluctuations in market prices and limited access to broader markets could continue to challenge farmers, affecting their income stability and growth potential

Positive

Initiatives such as the **OECM Aravalli** pioneer community-led, nature-based conservation to strengthen Haryana’s ecological resilience and inspire similar efforts across ecological zones

Continued **investment in R&D** for developing high-yield and climate-resilient crop varieties is expected to boost agricultural output and resilience to climate change

Innovative agricultural technologies (Precision Agriculture, Vertical Farming, Aquaponics) are enhancing sustainability

Weights of the Past

Positive

Haryana’s Green Revolution Legacy in the 1960s and 1970s, which introduced high-yield crop varieties and modern farming techniques, set a foundation for agricultural prosperity

The state's longstanding agricultural tradition has fostered a **robust knowledge base and skilled workforce**, contributing to continued agricultural productivity and innovation.

Early adoption of technologies like greenhouse farming and drip irrigation lay the groundwork for advancement

Environmental regulations positively impacted ecosystem health

Cold storage facilities (382 in 2023)³³ reduce post-harvest losses

Negative

Persistent soil degradation due to chemical use may lead to reduced soil fertility, impacting crop yields and long-term agricultural sustainability

Despite efforts to improve **financial accessibility**, small and marginal farmers may still face challenges in obtaining affordable credit, limiting their ability to invest in technology and infrastructure

Negative

High costs and technological barriers limiting technology adoption and worsening post-harvest losses

Monoculture practices in the past, focusing on a narrow range of crops, have **limited biodiversity** and made the agricultural sector vulnerable to pests, diseases, and market fluctuations

Over-reliance on groundwater for irrigation degrading water resources

Excessive fertiliser and pesticide use compromising long-term agricultural productivity

Stubble burning contributing to air pollution and climate change

WHERE DO WE WANT TO GO?

VISION 2047

By 2047, Haryana will Future-Secure Agriculture and Food by transforming itself into a global hub of sustainable, high-value agriculture, driven by innovation, empowered farmers, and climate-resilient systems, while ensuring economic prosperity, reduced agrarian dependency, and leadership in cereals, pulses, oilseeds, cash crops, animal husbandry, horticulture, fisheries under resource efficient production phenomenon including the organic/natural production systems.

- **Climate Resiliency:** Pioneering water conservation, carbon-neutral farming, and environmental stewardship
- **Sustainable Agriculture:** Expanding natural/organic farming, agroforestry, and biodiversity enhancement to regenerate ecosystems
- **Technological Innovation:** Deploying precision agriculture, hydroponics, vertical farming, and AI-driven systems to optimise resource use
- **Supply Chain Excellence:** Developing seamless farm-to-market networks with minimal waste and maximum value retention
- **Economic Prosperity:** Ensuring farming remains profitable, markets are stable, and value addition is maximised
- **Focus on Allied Sectors:** Expanding non-farm sectors, like horticulture, fisheries, animal husbandry, mushroom cultivation, and apiary development is vital for diversifying Haryana's agricultural economy and boosting rural livelihoods.

STRATEGIC MISSION*

Future-Secure Agriculture and Food – The EEE Approach

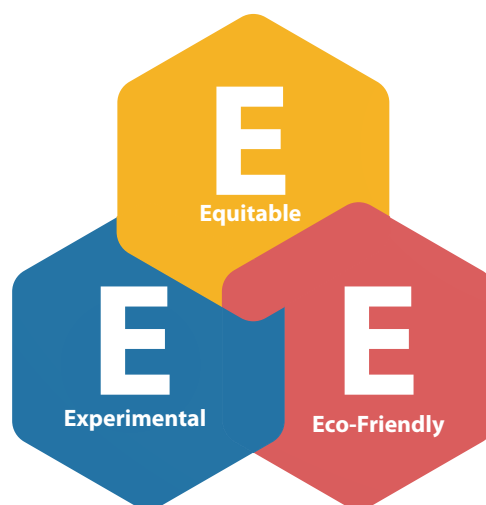
Haryana is committed to transform its agricultural landscape through the **EEE Approach – Equitable, Eco-Friendly, and Experimental Farming**. This forward-looking strategy aims to revolutionise Haryana's agrarian economy by diversifying crops, adopting cutting-edge technology, and building efficient supply chains to quadruple farmer income in real-value terms, promote agro-industries, and transition 20% of farmland to organic/natural practices by 2047. We will empower smallholders, consolidate landholdings, and leverage national missions to create a future where farming is profitable, sustainable, and aspirational.

*Aligned Departments: Agriculture, Horticulture, Animal Husbandry, Fisheries, Forests, Environment, Cooperation, Food & Supplies

1. Equitable: This dimension focuses on creating fair opportunities and inclusive benefits for all involved in agriculture – from small and marginal farmers and labourers. It seeks to ensure equitable access to resources, fair pricing, and a balanced share in the prosperity generated by the sector, thereby reducing disparities and fostering social justice within rural communities.

2. Eco-Friendly: Emphasising sustainable and environmentally responsible practices, this component encourages the adoption of techniques that conserve water, improve soil health, and reduce pollution. It aims to safeguard natural resources for future generations while addressing the growing risks of climate change and environmental degradation.

3. Experimental: This aspect promotes culture of innovation by encouraging the adoption of new crop varieties, precision farming technologies, advanced agronomic practices and sustainable practices. By fostering experimentation, the approach prepares farmers to adapt to changing conditions and enhances the resilience of Haryana’s agriculture.



However, a significant challenge lies in the existing resistance among farmers to adopt new technologies, driven by the need for income security and limited scope for risk-taking ability. Overcoming this requires gentle policy nudges, financial safeguards, and supportive schemes (extension support from State agriculture universities and ICAR institutes) that ease the transition towards sustainable and future-ready agriculture.

GOALS

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|----------|-----------------|-------------|-------------|-------------|---|
| Growth Rate of Agriculture & Allied Sectors (%) | 4.4% | Annexure 2 | 5.17% | 5.33% | 2.01% | Based on the research paper "Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|-------------------|---|-------------|-------------|-------------|---|
| Forest cover to total geographical area | 4.04% (2020 - 21) | MoEFCC, GOI | > 4.7% | > 5% | > 6% | National target of 33% land under forest cover. Targets aligned with India's commitment under Paris Agreement; progressive increase through agroforestry expansion, ecological restoration, and carbon sequestration initiatives. |
| Proportion of net sown area to cultivable land | 90.73% (2021-22) | Statistical Abstract of Haryana 2022-23 | 100% | 100% | 100% | Full utilisation of cultivable land ensures food security and maximises agricultural output while promoting sustainable land management practices. Achievable through land reclamation and modern farming techniques. |
| Percentage of degraded land developed for farming activities | 11.09% (2020) | Department of Agriculture and Farmers Welfare | 100% | 100% | 100% | UN Land Degradation Neutrality targets; Land Degradation Neutrality Fund aims for 12 million hectares globally by 2030. Targets align with SDG 15.3 for land degradation neutrality by 2030; progressive improvement through soil remediation techniques and sustainable land management. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|---------------------|---|-------------|-------------|-------------|--|
| Percentage of net area under natural/organic farming | 0.144% (March 2023) | Statistical Abstract of Haryana 2022-23 | ~5% | > 10 | > 20% | Leading states (Sikkim - 100%, Uttarakhand - 12%). Targets align with National Programme for Organic Production goals; progressive adoption curve reflecting certification timelines and market development for organic produce. |
| Availability of milk per capita per day (liters) | 1,105 (2023-24) | Economic Survey of Haryana 2024-25 | 1607 | > 1745 | > 2,000 | Global leaders: USA (960 L/capita/year), New Zealand (630 L/capita/year). Targets reflect Haryana's position as leading dairy producer; achievable through genetic improvement, feed management, and value-chain strengthening. |
| Poultry egg production (in lakhs) | 85,595.79 (2023-24) | Department of Animal Husbandry & Dairying | 1,20,000 | > 130590 | > 1,50,000 | National targets aim for 145 eggs per capita by 2030. Progressive growth reflecting improved breed development, disease management, and modernised poultry operations aligned with protein security objectives. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|-------------------------------------|---|----------------------------------|------------------------------|-----------------------------------|---|
| Fish productivity (kg per hectare per year) | 7,232.46 (2021) | Department of Fisheries, Gol | 16000 | > 20940 | > 30,000 | Global leaders: China (>25,000 kg/ha/yr). Targets reflect transition to intensive aquaculture systems, species diversification, and improved water management technologies. |
| Productivity of fruits and vegetables (Metric Tonne/Hectare) | Fruits: 12.22; Vegetables: 17.65 | Statistical Abstract of Haryana 2023-24 | Fruits: 20; Vegetables: 21.95 | Fruits: 30 Vegetables: 28 | Fruits: > 50; Vegetables: > 40 | Global leaders: Netherlands (Vegetables: >50 MT/ha). Targets align with National Horticulture Mission objectives; achievable through protected cultivation, precision farming, and climate-resilient varieties. |
| Percentage of farmers issued Soil Health Card | 93.5 (2019-20) | Department of Agriculture and Farmers Welfare | 100 | | 100 | National target of 100% coverage under Soil Health Card scheme. Complete coverage essential for precision agriculture and sustainable soil management; achievable through digital integration and mobile testing units. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|------------|--|-------------|-------------|-------------|--|
| Cold storage capacity (in '000 tonnes) | 382 (2023) | Directorate of Marketing and Inspection (DMI) upto 2009, National Horticulture Board (NHB), National Horticulture Mission (NHM), Horticulture Mission for North East & Himalayan States (HMNEH) and Ministry of Food Processing Industries (MoFPI) | 450 | > 503 | > 600 | National Cold Chain Development target: 35 million MT by 2030. Progressive capacity increase aligned with production growth projections; essential for reducing post-harvest losses and supporting export targets. |

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

- Persistent market uncertainties and price fluctuations threaten long-term sustainability and livelihoods
- Inadequate policy frameworks impede efforts to address critical challenges
- Continued soil degradation leads to poor yields and heightened food insecurity
- Inefficiencies due to scattered landholdings and absentee landlordism hinder modernisation

NEGATIVE DISRUPTIVE FUTURE (RISKS)

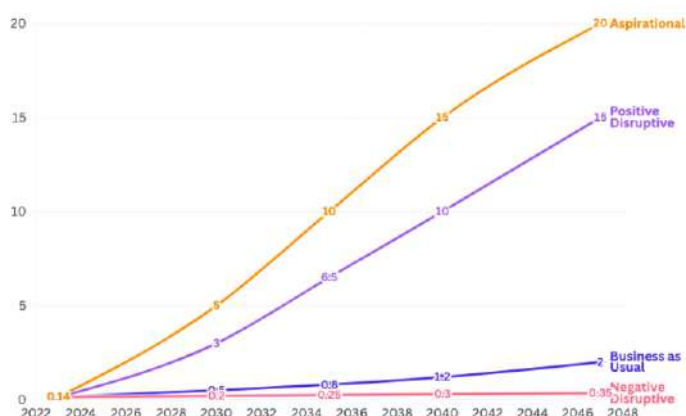
- Widened disparities among farmers impede overall progress and competitiveness
- Declining Total Factor Productivity and rising production costs threaten economic viability
- Environmental degradation intensifies due to water overuse, chemical inputs, and stubble burning
- Long-term sustainability of agriculture and the environment is increasingly threatened

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

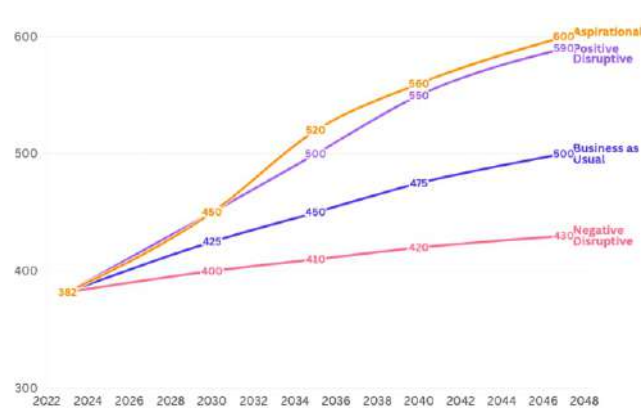
- Haryana emerges as a trailblazer in eco-friendly agricultural practices
- Continued investment drives innovation and improves productivity and sustainability
- Market-focused initiatives bolster farmer income and enhance value chains
- Increased agricultural exports position Haryana as a leader in sustainable agriculture and economic growth

ASPIRATIONAL FUTURE

- Optimised resource utilisation maximises yields and ensures enduring food security
- Advanced agricultural technologies mitigate post-harvest losses and enhance sustainability
- Prosperous, eco-conscious agricultural sector with enhanced income and livelihoods
- Rural economic growth stimulated by guaranteed price support and farmer-friendly policies



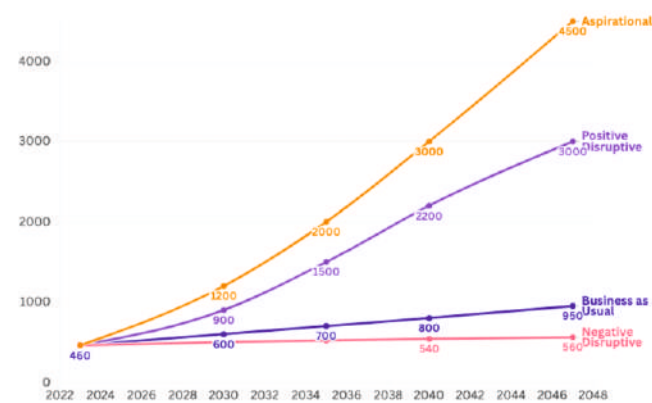
Graph 21 (a): Percentage of Net Area under natural/organic farming



Graph 21 (b): Cold Storage Capacity (in '000 tonnes)



Graph 21 (c): Groundwater Extraction Rate (%)



Graph 21 (d): Number of Farmer Producer Organisations (FPOs)

HOW WILL WE REACH THERE?

Realising Haryana’s agricultural vision calls for a comprehensive, interconnected strategy across six core domains. Productivity-led growth must be driven through research, innovation, and agro-climatic zone-based planning, ensuring that government schemes align with local ecological strengths, particularly in horticulture. With declining natural resources, focus shifts to climate-smart practices, efficient water management, and regenerative agriculture to restore soil health and raise soil carbon from 0.3% to 1% by 2047. Key actions include no-till or reduced tillage, cover cropping, use of compost and manure, and integration of trees and shrubs through agroforestry and horticulture for long-term carbon storage. Minimising post-harvest losses requires an integrated cold chain system connecting farm gate to consumer—covering collection, grading, sorting, pre-cooling, processing, and refrigerated transport. Such seamless infrastructure strengthens value chains, improves quality, and boosts farmer incomes.

Modernisation of agriculture depends on digitalisation, precision farming, and AI-enabled decision systems for efficient resource use and risk management. Expanding post-harvest infrastructure, market linkages, and innovative financing mechanisms will further enhance productivity and stability. Above all, transformation must remain inclusive, empowering farmers of all landholding sizes through reformed land policies, strong FPOs, and diversified, future-ready markets. The strategic pathways outlined provide actionable short- and long-term pathways toward an equitable, sustainable, and globally competitive agriculture ecosystem by 2047.

Issues

- 🔍 Climate Resilience and Environmental Protection
- 🔍 Sustainable Agriculture Practices
- 🔍 Advanced Agricultural Technologies
- 🔍 Supply Chain and Post-Harvest Management
- 🔍 Economic Viability and Market Adaptation
- 🔍 Agrarian Reform and Innovative Markets

ISSUE 1: CLIMATE RESILIENCE AND ENVIRONMENTAL PROTECTION

The agricultural landscape in Haryana faces mounting challenges from climate change and environmental degradation. While the Green Revolution propelled food production, it left environmental concerns, including intensive agrochemical use and biodiversity loss. Rapidly depleting groundwater reserves, exacerbated by water-intensive crops like paddy (covering 17.78 lakh hectares in 2023-24)³⁴ and subsidised electricity, have reached critical levels with a 135.74% extraction rate.³⁵ Additional challenges include air pollution from stubble burning (declining but still significant with 1,118 incidents in 2024)³⁶ and agricultural greenhouse gas emissions that have nearly doubled from 39.57 to 75.72 Mt Co₂ between 2005-2023.³⁷ Building resilience against climate variability and extreme weather events is now imperative for ensuring food security and sustainable livelihoods.

Current Status

- ✔ Annual groundwater extraction: 11.80 billion cubic metres (extraction rate: 135.74%)³⁸
- ✔ Agricultural electricity subsidy: INR 5,941.17 crore (2024-25)³⁹
- ✔ Paddy stubble burning cases: 6,987 (2021), 3,661 (2022), 2,303 (2023), 1,118 (2024) Ministry of Environment, Forests and Climate Change (MoEFCC)
- ✔ GHG emissions increase: 39.57 Mt CO₂ (2005) to 75.72 Mt carbon dioxide equivalent (Co2e) (2023)⁴⁰
- ✔ Carbon dioxide emissions from crop residue burning: 2,344.59 to 2,602.82 gigagrams/year (2011-2020)⁴¹

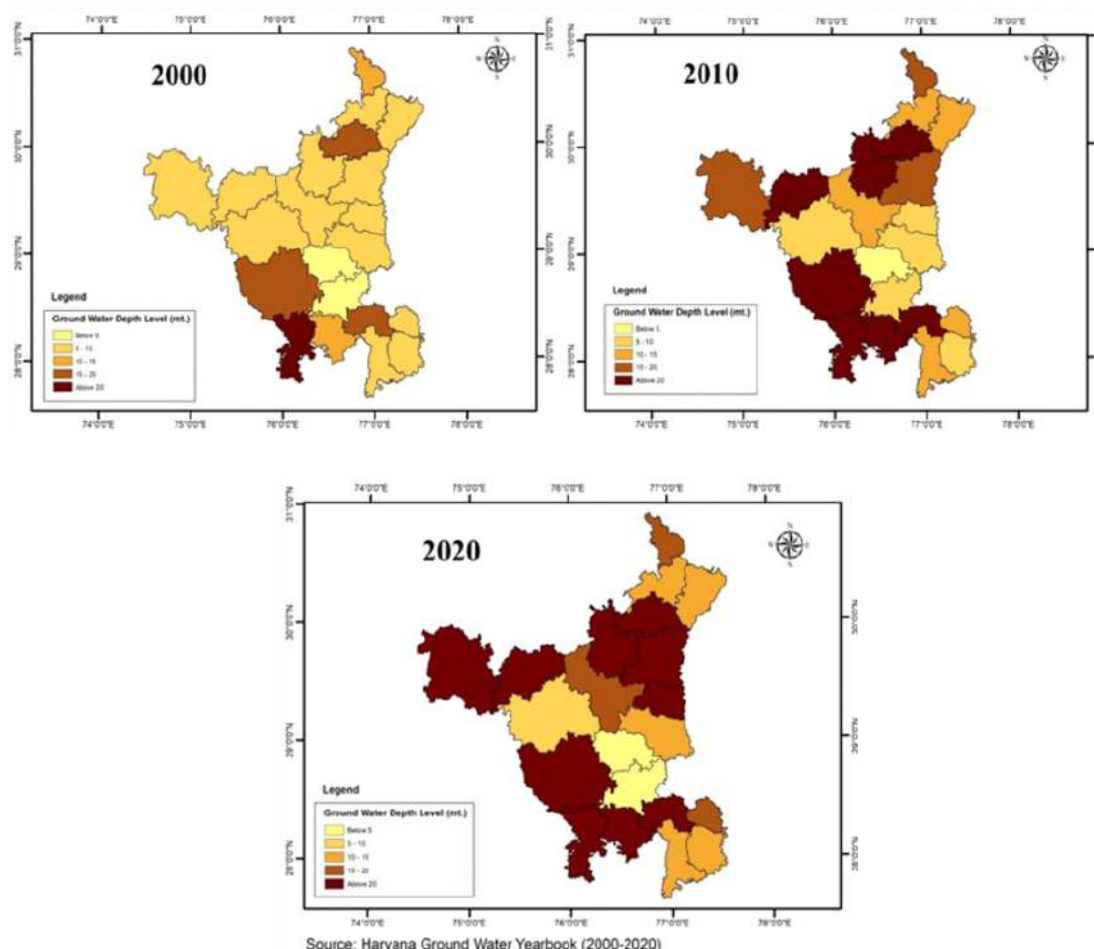
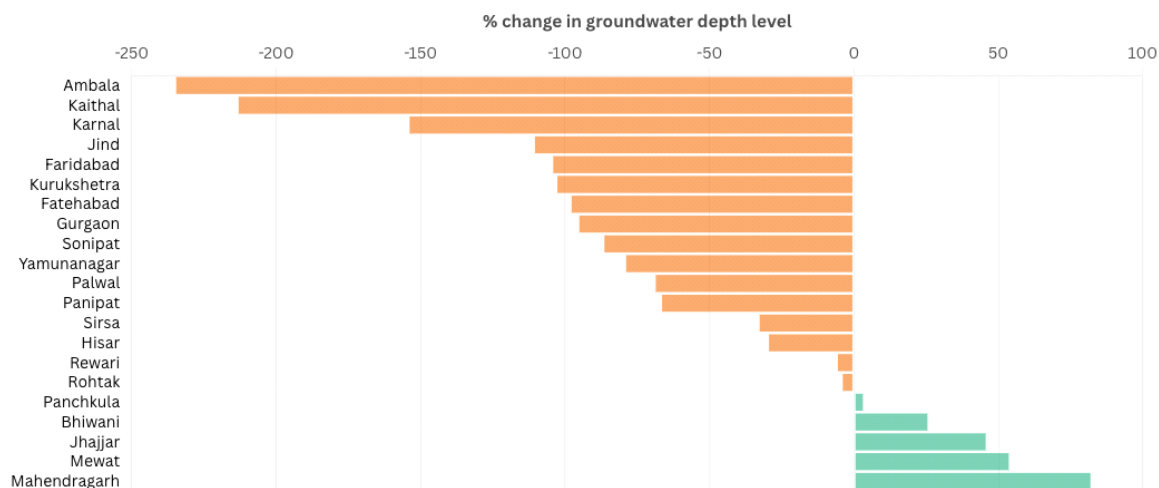


Figure 3: District-wise Groundwater Depth in Haryana over 2000-2020
(Source: Haryana Groundwater Yearbook (2000-2020))



Graph 22: Percentage Change in Groundwater Depth Level

(Source: National Compilation on Dynamic Ground Water Resources of India 2024)

- NOTE: Historical data for Charkhi Dadri are not readily available since the district was formed in 2016.

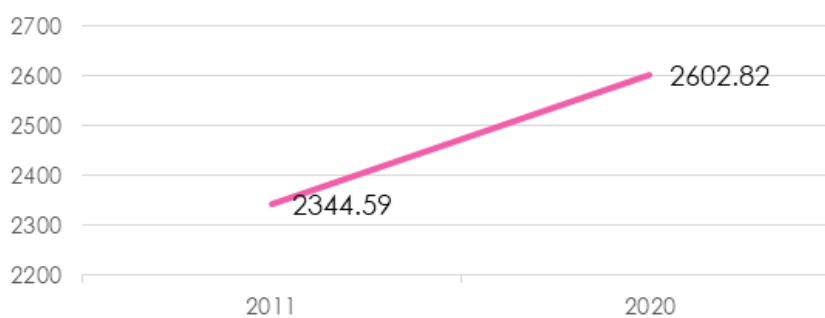
Paddy Farm Fire Counts in Haryana



Graph 23: Paddy Farm Fire Counts in Haryana

(Source: PIB <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1981276>)

Co2e Emissions from Crop Residue Burning

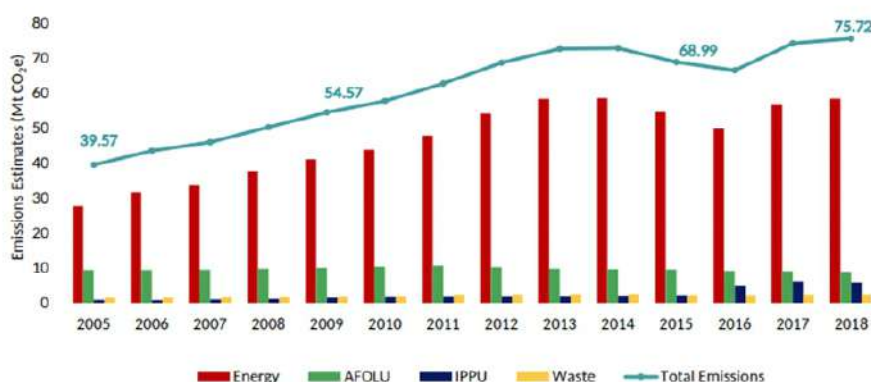


Graph 24: CO2e Emissions from Crop Residue Burning

(Source: Deshpande M V, et al Greenhouse gas emissions from agricultural residue burning have increased by 75 % since 2011 across India, Science of The Total Environment)

Economy-wide Emissions Estimates

Figure 1: GHG Emissions Estimates of Haryana (2005 to 2018)



Graph 25: GHG Emissions Estimates of Haryana 2005 to 2018
(Source: Trend Analysis of GHG Emissions of Haryana)

Factors Influencing the Issue

- **Political Will and Policy Framework:** Government commitment through regulatory measures and incentives directly impacts adoption rates of climate-resilient practices and technologies.
- **Market and Public Perception:** Growing public awareness and consumer demand for environmentally responsible products are creating strong market incentives, driving the financial viability of climate-smart agricultural practices and attracting investment.
- **Farmer Education and Attitude:** Knowledge gaps and traditional practices often hinder implementation of climate-resilient technologies and sustainable farming methods.
- **Technological Innovation:** Precision agriculture, renewable energy integration, and water conservation technologies offer solutions but require accessible financing mechanisms.
- **Environmental Pressures:** Water scarcity, rising temperatures, and extreme weather events create urgency for adaptation strategies.
- **Research and Development:** Ongoing scientific innovation in climate-adaptive crop varieties and farming techniques supports transition to resilient agriculture.
- **Livestock Productivity and Methane Mitigation**
 - Heat Stress and Drought Impacts: Rising temperatures and prolonged dry spells are directly affecting livestock health and milk yields, leading to reduced income and nutritional security for rural households.

- **Methane Reduction through Improved Feeding:** Adoption of improved feed formulations, probiotics, and balanced diets can significantly cut methane emissions per unit of milk produced, enhancing both productivity and environmental outcomes.
- **Biogas and Manure Management:** Promoting biogas plants and scientific manure management systems can help reduce greenhouse gas emissions, recycle nutrients, and generate clean energy for rural households.

Impacts of the Issue

Direct Impact

- Reduced water usage and pressure on groundwater from water conservation practices
- Reduced air pollution and health hazards from eliminating stubble burning
- Enhanced adaptation to changing climate conditions
- Initial investment costs in climate-resilient infrastructure

Indirect Impact

- Improved water availability and quality, enhanced soil health and biodiversity, economic benefits from diversification, increased resilience to climate impacts, and preserved aquifer levels
- Improved soil fertility, mitigated GHG emissions, enhanced biodiversity and ecosystem health
- Improved agricultural productivity despite climate variability, sustainable land and water management, and ecosystem health preservation
- Enhanced community resilience to climate risks, reduced vulnerability, ensured food security, reduced emissions, and climate change mitigation

Global Learnings

Global Best Practice

Israel's Drip Irrigation Revolution

Israel pioneered modern drip irrigation technology, a transformative solution to the challenge of overexploitation of groundwater in agriculture. With water efficiency levels reaching up to 95–100%, this innovation has enabled farmers to maintain high crop yields in arid and water-scarce environments. This technology has since been adopted globally and is credited with significantly improving water-use efficiency and sustainability in agriculture across multiple continents.⁴²

Disruptive Technologies - Mitigating Climate Change Through Biogas Production

Biogas, sourced from organic materials like food residues, manure, and slurry, offers a renewable energy solution for agriculture while closing the nutrient loop. By converting waste into biogas and utilising the resulting digestate as fertiliser, farmers can reduce GHG emissions, decrease reliance on chemical fertilisers, and secure additional income streams. This sustainable cycle enhances agricultural resilience and environmental stewardship.⁴³

Possible Pathways

Short-Term Pathway (2030)

Adoption of Climate-Smart Agriculture Practices

- Implement region-specific policies mandating precision farming and drip irrigation adoption, with compliance monitoring and financial incentives
- Implement mandatory, inclusive farmer training on climate-smart techniques through mobile apps, e-learning portals, and community-led outreach, ensuring last-mile access for smallholders, women, and tenant farmers

Technology-Driven Climate Risk Monitoring and Infrastructure

- Deploy satellite-integrated AI systems for climate risk monitoring with real-time data hubs for early intervention
- Modernise irrigation infrastructure with IoT-driven smart water systems and provide incentives for farmers to end crop burning

Water Harvesting and Pollution Mitigation Partnerships

- Establish collaborative partnerships with NGOs for large-scale water harvesting and pollution control campaigns

Strengthening Climate Resilience and Environmental Monitoring

- Establish Central Command Centre for Agriculture

Strengthening Water Security and Management

- Integrated and data-driven water management via Block/Sub-Division Level Water Security Councils and a Real-time Groundwater Monitoring Dashboard

Water Resource Management

- Develop a Real-Time Water Governance System using satellite and sensor-based monitoring
- Promote micro-irrigation, precision irrigation, and water-efficient crop planning

Long-Term Pathway (2047)

Advanced Technology for Climate Monitoring and Risk Management

- Develop comprehensive real-time climate monitoring platforms using AI and satellite imagery for policy-making and adaptation solutions
- Deploy AI-driven forecasting models integrating satellite and sensor data for automated disaster early warning and risk mitigation

Circular Economy and Waste Management in Agriculture

- Enforce Extended Producer Responsibility policies requiring industries to manage agricultural waste recovery and expand waste-to-energy systems

Water Resource Management

- Introduce a Water Credit System rewarding farmers for reducing water use against district benchmarks
- Establish basin-level integrated water management frameworks with AI-driven forecasting

Climate Resilience and Natural Farming

- Promote carbon-credit incentives for low-emission farming
- Embed resilience and disaster preparedness across all agriculture programmes through early warning and insurance linkages

Under Residue Management and Environmental Protection

- Enforce environmental safeguards through biodiversity enhancement, waste recycling, and low-emission technology adoption
- Integrate air quality and soil health monitoring into farm-level sustainability reporting

Short-Term Pathway (2030)

Climate Resilience and Natural Farming

- Pilot and validate natural farming practices across agro-ecological zones
- Integrate climate-smart technologies—stress-tolerant varieties, micro-irrigation, and renewable energy systems

Residue Management and Environmental Protection

- Incentivise Custom Hiring Centres (CHCs) for residue management machinery
- Promote composting, pelletisation, and biogas units as alternatives to stubble burning

Long-Term Pathway (2047)

ISSUE 2: SUSTAINABLE AGRICULTURE PRACTICES

Haryana, a key state in India’s agricultural landscape, has been at the forefront of agricultural development since the Green Revolution, playing a vital role in enhancing food grain production and contributing to national food security. However, the long-term sustainability of agriculture in the state is questionable due to intensive farming practices. Reliance on traditional rice-wheat cropping systems has resulted in groundwater depletion, soil degradation, and responsive varieties have increased dependency on chemical fertilisers and fertilisers & pesticides. In response, the Haryana Government is actively promoting sustainable agricultural practices through crop diversification programmes, the adoption of less water-intensive crops, and the encouragement of organic and natural farming. Notably, initiatives like **“Mera Pani Meri Virasat”** aim to motivate farmers towards water-saving techniques and alternative cropping patterns. In a significant development, the Chief Minister announced in February 2025 that **24,000 farmers have registered on the ‘Natural Farming Portal,’ with over 10,000 farmers currently practising natural farming on 15,170 acres of land**⁴⁴. Integrated Crop-Livestock Farming Systems (ICLFS) for small/marginal farmers improves soil fertility, recycles nutrients, diversifies income, and builds resilience.

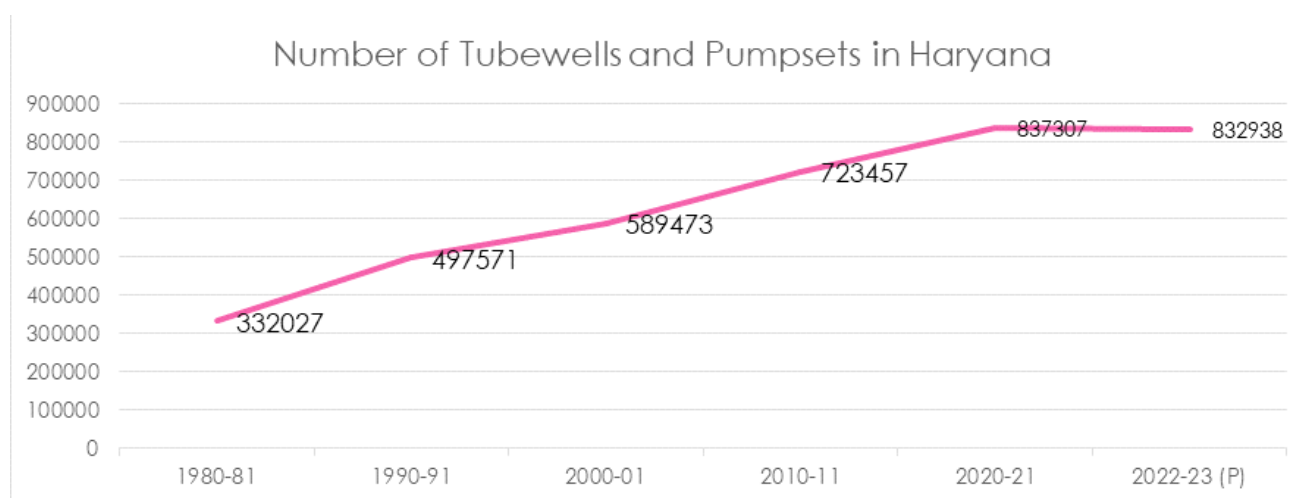
The state has dedicated 5,177.75 hectares to natural/organic farming⁴⁵ with ambitious expansion plans, while agroforestry systems based primarily on poplar and eucalyptus cover approximately 3% of farmlands.⁴⁶ However, soil health degradation remains a pressing concern due to excessive fertiliser and pesticide use (4,066 metric tonnes in FY 2020-21)⁴⁷, compromising long-term productivity and ecosystem health. Despite recognition of water conservation importance, adoption rates of micro-irrigation technologies remain suboptimal, with coverage of approximately 6,83,524 hectares (43,868 hectares under drip and 6,39,656 hectares under sprinkler irrigation)⁴⁸. Addressing these challenges through integrated approaches is critical for maintaining agricultural productivity and environmental sustainability.

Current Status

- ✔ Natural/organic farming area: 5,177.75 hectares⁴⁹
- ✔ Agroforestry coverage: 3% of farmlands⁵⁰
- ✔ Micro-irrigation area: 6,83,524 hectares (43,868 hectares drip, 6,39,656 hectares sprinkler)⁵¹
- ✔ 65 lakh Soil Health Cards issued⁵²
- ✔ Soil Testing Labs: 142 (52 static, 54 mini, 36 village-level)⁵³

Factors Influencing the Issue

- **Market Forces:** Growing consumer preference for organic and sustainably grown products creates economic incentives for adoption.
- **Policy Support:** Subsidies for organic inputs, certification, and water-saving technologies significantly impact adoption rates.
- **Economic Viability:** Transition costs and yield concerns during conversion periods are primary considerations for smallholder farmers.
- **Knowledge Access:** Agricultural extension services and farmer-to-farmer knowledge networks accelerate the implementation of conservation techniques.
- **Climate Change Impacts:** Erratic rainfall patterns and temperature fluctuations create urgency for resilient farming systems.
- **Social Factors:** Community cohesion and traditional knowledge systems influence collective action toward sustainable resource management.
- **Technological Innovation:** Advancements in precision farming, biological pest control, and soil health monitoring provide practical solutions.
- **Infrastructure Limitations:** Inadequate storage, processing, and market access facilities constrain value realisation from sustainable products.



Graph 27: Number of Tubewells and Pumpsets in Haryana
(Source: Department of Irrigation and Water Resources, Haryana)

Impacts of the Issue

Direct Impact

- Increased soil fertility and biodiversity from natural/organic farming
- Reduced soil erosion and water runoff from agroforestry
- Reduced water usage and enhanced efficiency through conservation techniques

Indirect Impact

- Enhanced water retention, reduced erosion, improved soil structure, increased crop yields, carbon sequestration, and long-term environmental sustainability
- Decreased flood risk, economic benefits from agroforestry products, diversified income streams, enhanced rural livelihoods
- Reduced waterlogging and salinisation, enhanced crop yields, stabilised groundwater levels, and prevention of further resource depletion

Global Learnings

Global Best Practice

Ethiopia's Community-Led Soil and Water Conservation Initiatives

Ethiopia has implemented extensive community-driven soil and water conservation programmes to combat severe land degradation and enhance agricultural productivity. Notably, projects like the Sustainable Water Fund's "Ziway-Shalla: Basin in Balance" have engaged local communities in constructing physical structures such as stone bunds and terraces to reduce soil erosion and improve water retention. These interventions have led to significant improvements in soil fertility, increased crop yields, and restored degraded landscapes.⁵⁴

Disruptive Technologies - Integrating Drone Technology for Sustainable Agriculture and Water Conservation

Through the utilisation of drones equipped with advanced sensors, farmers can precisely monitor crop health and detect signs of strain, enabling targeted irrigation and resource management. This strategic approach allows farmers to optimise water usage by watering only those plants in need, thereby enhancing agricultural efficiency and promoting environmental sustainability.⁵⁵

Possible Pathways

Short-Term Pathway (2030)

Sustainable Farming and Climate Resilience Incentives

- Enforce organic certification standards and provide financial incentives for agroforestry adoption and water conservation techniques
- Deploy drip and precision irrigation systems with IoT-based monitoring and provide financial incentives for farmers adopting crop diversification

Research and Data-Driven Interventions

- Partner with research institutions to conduct region-specific soil health studies and climate adaptation research
- Distribute affordable soil testing kits with AI-integrated digital platforms for real-time nutrient analysis and crop suitability guidance

Capacity Building and Knowledge Dissemination

- Allocate government grants and mobilise private sector investments for farmer training via digital platforms and on-site demonstrations

Promoting Sustainable Farming Practices

- Setting up Traditional Knowledge Information Centres for Agriculture

Promoting Millet Cultivation and Consumption

- Ensuring millet mainstreaming through Minimum Support Price (MSP) assurance, Public Distribution System (PDS) procurement, and nutrition programme inclusion

Policy and Institutional Strengthening

- Strengthen interdepartmental coordination for integrated agricultural development and ensure convergence of central and state-level schemes under a unified monitoring framework
- Align with PM-KUSUM, National Food Security Mission (NFSM), Rashtriya Krishi Vikas Yojana (RKVY) and State Agri Missions, integrating sustainability and entrepreneurship objectives

Long-Term Pathway (2047)

Policy Integration and Governance

- Embed sustainable agriculture principles into national policies with legally binding mandates monitored through AI-driven compliance systems

Institutional Development and Capacity Building

- Develop government-backed agricultural institutes offering specialised sustainability certifications and advanced training in climate-adaptive farming
- Establish farmer cooperatives and rural learning centres focusing on marginalised communities with hands-on training in regenerative agriculture

Ecological Restoration and Climate Mitigation

- Expand agroforestry zones and ecological buffer networks, restoring degraded lands with native vegetation through conservation corridors
- Implement large-scale reforestation and carbon sequestration projects using AI-driven land assessment for targeted restoration of degraded areas

Policy and Institutional Strengthening

- Establish the Haryana Agricultural Innovation Fund (HAIF) as a public-private seed fund to finance agri-startups in robotics, biotech seeds, precision tools, and sustainable inputs
- Create a unified institutional framework integrating agriculture, livestock, and allied sectors for One Health-aligned governance

Crop Diversification and Sustainability

- Promote Regenerative Agriculture Zones through “Regenerative Farming Clusters” integrating multi-cropping, biochar application, and carbon farming
- Foster secondary agriculture and rural enterprises for value addition and carbon credit generation

Soil Health and Nutrient Management

- Implement large-scale soil salinity management through subsurface drainage and green manuring

Short-Term Pathway (2030)

- Provide credit-linked subsidies and policy incentives for natural farming, residue management, and Integrated Pest Management (IPM) adoption
- Institutionalise periodic impact assessments and feedback loops for evidence-based policy refinement

Crop Diversification and Sustainability

- Develop region-specific diversification models focusing on high-value, low-water crops (pulses, millets, oilseeds, vegetables, fodder).
- Promote short-duration varieties and legumes/pulses in crop rotations to enhance soil fertility.
- Encourage agroforestry, horticulture-based models, and cluster-based diversification incentives.
- Scale up Direct Seeded Rice (DSR) and Zero-Tillage Wheat (ZTW) for water and energy optimization.

Soil Health and Nutrient Management

- Promote Soil Health Cards and customised nutrient management with biofertiliser and microbial consortia adoption.
- Establish soil, fertiliser, and pesticide testing laboratories, including mobile testing units.

Capacity Building and Human Resource Development

- Invest in training programmes for extension workers, FPO members, and youth across crop and allied sectors.
- Develop training modules on DSR, IPM, and regenerative practices tailored to Haryana's agro-climatic zones.
- Promote digital capacity building and farmer-to-farmer learning models.

Long-Term Pathway (2047)

- Advance carbon farming and soil organic matter restoration under regenerative agriculture frameworks.

Capacity Building and Human Resource Development

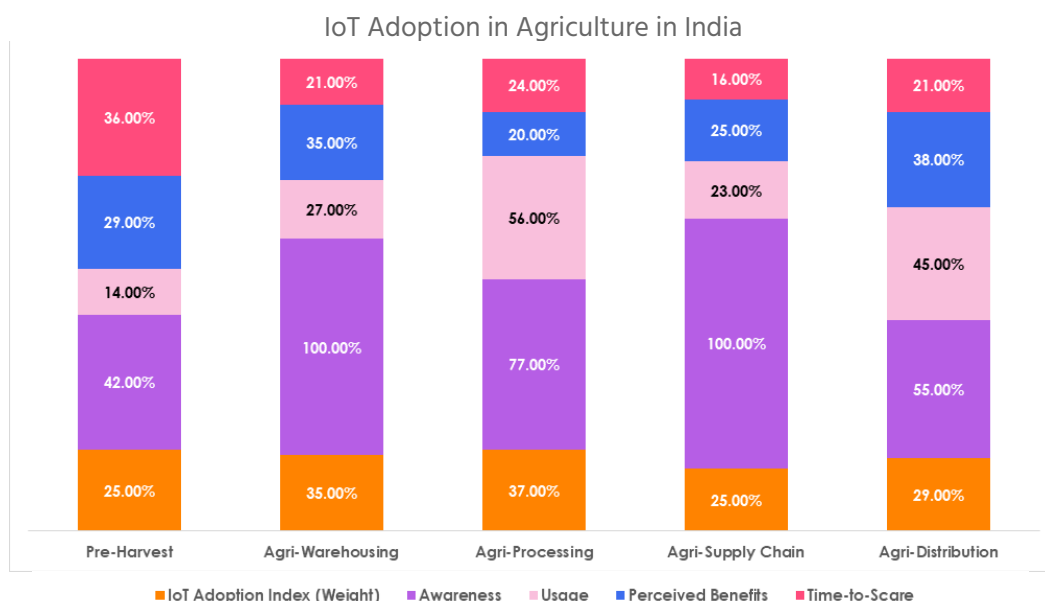
- Promote gender-responsive mechanization with lightweight, battery-operated tools and women-led cooperatives.
- Institutionalize agri-skill academies for continuous, adaptive learning.

ISSUE 3: ADVANCED AGRICULTURAL TECHNOLOGIES

The ever-increasing demand for food production, driven by population growth, presents significant challenges for Haryana's agricultural sector. Traditional farming methods struggle to meet this escalating demand, especially amid rising pollution levels and unpredictable climate patterns. The adoption of advanced technologies offers promising solutions—with the Indian Hydroponics Market reaching 506.7 Million USD in 2024 (projected CAGR: 16.91%),⁵⁶ the Vertical Farming Market valued at 82.7 million USD (projected to reach 579.7 million USD by 2033),⁵⁷ and the Precision Agriculture Market at 102.31 million USD (projected 6.12% growth through 2030).⁵⁸ The Haryana Government is actively promoting the use of technology in agriculture through several forward-looking initiatives. The state has introduced AI and drone technology for assessing crop yields and losses, improving efficiency and decision-making in farming. To facilitate the adoption of drone technology, training programmes are being offered to farmers, enabling them to become certified drone pilots. In a historic move, the government has also decided to provide drone-based spraying services for agrochemicals, including nano urea, ensuring this facility reaches every farmer's field. These initiatives form part of a broader strategy to integrate digital technologies into agriculture, aiming to enhance productivity, sustainability, and farmer welfare. However, adoption remains uneven, with greater integration in processing sectors than pre-harvest operations, highlighting the need for targeted initiatives to design and implement innovative farming techniques tailored to the region's specific needs and constraints.

Current Status

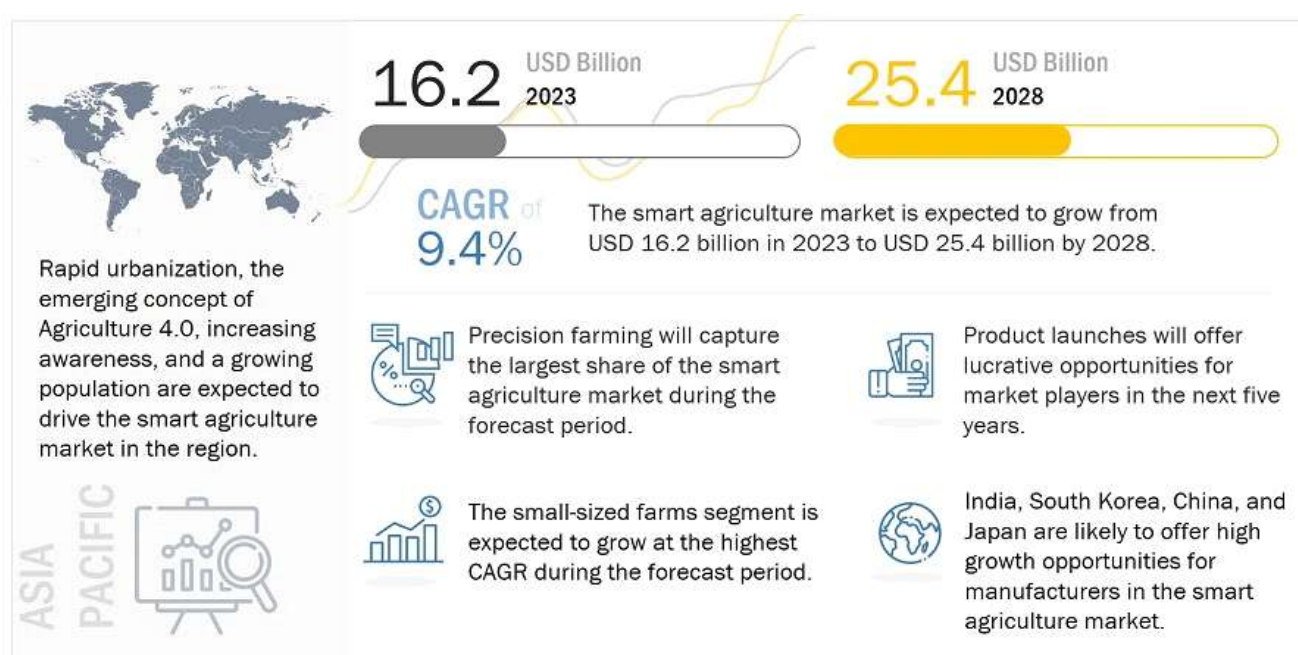
- ✔ Indian Hydroponics Market: 506.7 Million USD (2024), CAGR of 16.91% (projected 2025-2033)⁵⁹
- ✔ India Vertical Farming Market: 82.7 million USD (2024), projected to reach 579.7 million USD by 2033⁶⁰
- ✔ Higher IoT adoption in agricultural processing than in pre-harvest operations
- ✔ India Precision Agriculture Market: 102.31 million USD (2024), CAGR of 6.12% (projected 2026-2030)⁶¹
- ✔ Smart Agriculture Market growth: 16.2 billion USD (2023) to 25.4 billion USD (2028)⁶²
- ✔ Government allocation for new agricultural technologies: 200.22 million USD (2020-21), 276.3 million USD (2021-22)⁶³



Graph 28: IoT Adoption in Agriculture in India
(Source: Statista 2024)

Factors Influencing the Issue

- **Government Support:** Policy frameworks, subsidies, and regulatory environment create enabling conditions for technological innovation.
- **Technological Advancement:** Ongoing innovation in IoT, AI, blockchain, and biotechnology provides increasingly sophisticated agricultural solutions.
- **Real-Time Disease Forecasting and Bio-Surveillance:** The use of IoT-enabled sensors, Geographic Information System (GIS) mapping, and AI analytics is transforming livestock health management. Real-time animal disease forecasting and bio-surveillance systems enable early detection of outbreaks, quick response mechanisms, and data-based policy decisions—reducing losses and improving overall resilience in the livestock sector.
- **Environmental Pressures:** Water scarcity and climate variability generate demand for resource-efficient technologies like hydroponics and vertical farming.
- **Market Dynamics:** Premium pricing for high-quality produce and export opportunities provide economic incentives for technology adoption.
- **Knowledge Access:** Training, technical support, and demonstration projects significantly influence implementation success.
- **Economic Viability:** Initial investment costs versus long-term returns remain decisive factors, especially for small and marginal farmers.
- **Infrastructure Requirements:** Power supply stability, internet connectivity, and transportation networks determine technological feasibility.
- **Social Acceptance:** Cultural attitudes toward technology and willingness to deviate from traditional practices affect adoption rates.



Smart Agriculture Market Forecast to 2028

Figure 4: Smart Agriculture Market Forecast to 2028

(Source: Markets and Markets <https://www.marketsandmarkets.com/Market-Reports/smart-agriculture-market-239736790.html>)

Impacts of the Issue

Direct Impact

- Enhanced resource efficiency through optimal nutrient delivery, efficient water and land usage, and precise monitoring
- Development of skilled workforce through training and education
- Strengthened animal health systems addressing emerging and re-emerging zoonotic diseases, antimicrobial resistance (AMR), and food safety implications.

Indirect Impact

- Consistent crop quality, higher yields, increased profitability, economic growth, reduced environmental footprint
- Growth of agricultural technology startups and research, new market opportunities both locally and internationally

Global Learnings

Global Best Practice

United States' IoT-Driven Precision Agriculture:

In the United States, farmers are increasingly adopting IoT technologies to enhance precision agriculture practices. By deploying sensors that monitor soil moisture, nutrient levels, and crop health in real-time, farmers can make data-driven decisions to optimise resource usage, improve yields, and reduce environmental impact. This technological integration supports sustainable farming by enabling targeted interventions and efficient management of agricultural inputs.⁶⁴

Disruptive Technologies - Enhancing Agriculture with IoT Technology

The agriculture industry harnesses various technologies like the IoT to streamline operations and boost productivity. One prime application of IoT in agriculture is crop monitoring, where IoT sensors for temperature, humidity, light, pH, and soil moisture offer valuable insights leading to improved yields for farmers. Additionally, IoT sensors and connected devices play a crucial role in livestock management, enabling farmers to monitor the activities and health of their animals more effectively. This digital transformation in livestock management simplifies farmers' tasks and enhances overall farm efficiency.⁶⁵

Possible Pathways

Short-Term Pathway (2030)

Regulatory Framework and Compliance

- Establish legally binding guidelines for AI-driven precision farming and sensor-based irrigation systems with compliance monitoring

Long-Term Pathway (2047)

Policy Integration and Equitable Access

- Embed AI-driven precision farming, automated irrigation, and climate-smart technologies into agricultural policy frameworks, ensuring affordability and equitable access across all landholding categories

Short-Term Pathway (2030)

Public-Private Innovation and Technology Deployment

- Collaborate with agri-tech firms and research institutions to deploy region-specific smart farming solutions with data exchange platforms
- Set up publicly accessible pilot farms showcasing hydroponic and vertical farming systems with real-time data tracking
- Invest in AI-driven agricultural databases and IoT sensor networks for resource optimisation and climate impact prediction
- Build One Health-based disease surveillance capacity through multi-sectoral collaboration, training of stakeholders, and strengthening of veterinary and public health laboratories

Capacity Building and Digital Advisory

- Launch structured training programmes integrating AI-powered advisory tools and mobile applications for the practical application of advanced farming techniques

Accelerating Agricultural Innovation and Technology Integration

- Establish District and Village Agricultural Innovation Hubs and Clubs to promote adoption of modern farming techniques, experimentation, and knowledge sharing among farmers

Technology, Research, and Innovation

- Strengthen research–extension–farmer linkages through Agri-Innovation Hubs and KVK feedback systems
- Facilitate AI-based precision agriculture integrating digital monitoring and automation tools
- Foster start-up incubation and innovation hubs in value addition, biotech, and sustainable inputs

Integrated Crop–Livestock–Allied Systems

- Promote Integrated Farming System (IFS) models combining crops, livestock, and fisheries for resource recycling.

Long-Term Pathway (2047)

Global Research Partnerships and Innovation Transfer

- Form long-term collaborations with global research institutions for joint technology transfer programmes, enabling cross-border innovation

Technology-Driven Infrastructure and Systems

- Develop predictive AI models for crop optimisation, blockchain-secured supply chains, and IoT-powered farm monitoring systems for resource efficiency
- Build dedicated innovation centres equipped with automated hydroponics, AI-enabled soil analysis labs, and robotics-integrated farming systems

Advanced Training and Skilling

- Establish specialised vocational institutes offering advanced certifications in precision agriculture, AI-driven farm management, and agri-robotics
- Develop export-oriented livestock value chains and food safety certification systems to align with international standards and enhance global market access

Technology, Research, and Innovation

- Create a Farmer Data Cooperative – a statewide, farmer-owned data platform ensuring sovereignty and fair monetisation.
- Expand parametric agri-insurance using AI and satellite analytics for real-time payout mechanisms

Integrated Crop–Livestock–Allied Systems

- Replace blanket crossbreeding programmes with targeted genetic improvement and selective breeding
- Expand AI-based breed improvement, veterinary extension, and reproductive management

Monitoring, Evaluation, and Data Systems

- Institutionalise data-driven governance frameworks for predictive analytics, impact evaluation, and adaptive policy design

Short-Term Pathway (2030)

- Encourage manure-to-compost and biogas generation for circular resource flows

Monitoring, Evaluation, and Data Systems

- Build robust agricultural databases for productivity, climate, and socio-economic indicators
- Enable real-time digital dashboards for scheme performance tracking

Long-Term Pathway (2047)

- Integrate multi-sectoral data systems for agriculture, livestock, and natural resources management

ISSUE 4: SUPPLY CHAIN AND POST-HARVEST MANAGEMENT

In Haryana, effective supply chain and post-harvest management are crucial for minimising losses and optimising agricultural productivity. Current data reveals significant post-harvest losses in wheat, estimated at 406.74 thousand tonnes valued at INR 748.39 crore in 2019-20.⁶⁶ The state possesses 382 cold chain units with a capacity of 8,67,884 metric tonnes,⁶⁷ but this infrastructure remains insufficient given projected demands—food grain requirements are expected to reach 340-355 million tonnes nationally by 2033-34,⁶⁸ with substantial increases in dairy and horticulture products. Strategic initiatives, including allocating 25% of annual State Horticulture Mission funds for post-harvest management and allowing 100% FDI in food processing, represent important steps. However, comprehensive approaches incorporating biodegradable packaging, advanced cold chain development, sensor technologies, and AI-driven demand forecasting are essential to address persistent challenges of market gluts, price volatility, and quality deterioration throughout the value chain.

Dairy processing upgradation for export quality, traceability, and periodic external evaluation will also be key to strengthening Haryana's agro-industrial competitiveness and enhancing its contribution to global food value chains.

Current Status

- ✔ Estimated post-harvest losses in wheat (2019-20): 406.74 thousand tonnes (INR 748.39 crore)⁶⁹
- ✔ Cold storage facilities: 382 units with 8,67,884 metric tonnes capacity (2023)⁷⁰
- ✔ Government initiatives: 25% of annual State Horticulture Mission funds allocated for post-harvest management⁷¹
- ✔ Projected food grain demand (2033-34, All India): Rice 126 Mt, Wheat 119-120 Mt, Total 340-355 Mt⁷²
- ✔ Projected demand for dairy & horticulture (2032-33, All India): Liquid Milk 219 million KL, Vegetables 245.45 million tonnes, Fruits 175.91 million tonnes⁷³

Factors Influencing the Issue

- **Regulatory Framework:** Policies incentivising investment in cold chain infrastructure and quality standards enforcement determine development pace.
- **Technological Advancements:** Innovations in preservation techniques, smart packaging, and real-time monitoring offer transformative potential.
- **Infrastructure Limitations:** Inadequate storage facilities, processing units, and transportation networks create supply chain bottlenecks.

- **Market Dynamics:** Price volatility and evolving consumer preferences for quality and traceability drive demand for improved handling.
- **Environmental Considerations:** Sustainability requirements increasingly shape packaging and preservation methods.
- **Knowledge Gaps:** Insufficient awareness of proper harvest timing, handling techniques, and storage protocols contributes to avoidable losses.
- **Financing Constraints:** Limited access to capital restricts investment in critical infrastructure, particularly for small-scale producers.
- **Quality Standards:** International market requirements and food safety regulations influence post-harvest management practices.

Impacts of the Issue

Direct Impact

- Reduced post-harvest losses, increasing farmer income
- Enhanced quality and shelf life of agricultural produce
- Increased private sector participation in agricultural value chains

Indirect Impact

- Improved market access, better price realisation, enhanced food security, and economic resilience for farming communities
- Strengthened rural economy through increased employment opportunities, sustainable agricultural growth, and reduced dependency on external markets
- Enhanced resilience to market fluctuations and climate change, long-term agricultural sustainability

Global Learnings

Global Best Practice

Singapore's Smart Packaging Innovations for Shelf-Life Extension

Singapore has pioneered the use of smart packaging technologies to extend the shelf life of perishable goods. Innovations include biodegradable materials embedded with sensors that monitor freshness indicators such as gas emission levels. These intelligent packaging solutions not only reduce food waste by providing real-time quality assessments but also align with environmental sustainability goals by minimising plastic usage.⁷⁴

Disruptive Technologies - Portable Cold Storage Solutions

Portable cold storage solutions are transforming agriculture by prolonging the shelf life of crops and minimising post-harvest losses. These cutting-edge units, tailored for agricultural use, are easily movable and incorporate advanced cooling technology. They can empower farmers to enhance profits by facilitating delayed sales and entering into international markets, enabling them to amplify their revenue streams and maximise their harvest's potential.⁷⁵

Possible Pathways

Short-Term Pathway (2030)

Infrastructure Investment and Support

- Provide tax benefits and subsidies for private sector investment in refrigerated transport and cold storage infrastructure
- Modernise warehouses with energy-efficient, climate-controlled environments, smart monitoring technologies, and solar-powered automation systems
- Deploy mobile post-harvest units and digital advisory platforms, ensuring accessibility for small and marginal farmers

Standards and Sustainability

- Establish mandatory post-harvest quality standards and subsidise biodegradable packaging materials with eco-label certification

Technology and Market Intelligence

- Develop AI-powered predictive analytics systems, integrating real-time market trends and climate impact assessments

Enhancing Post-Harvest Management and Value Addition

- Establish post harvest & processing infrastructure with mini agro parks at block level with small-scale processing units

Post-Harvest Management and Market Linkages

- Develop rural cold chain, storage, and processing infrastructure for value chain integration.
- Establish solar-powered micro cold chains co-owned by FPOs for perishables.
- Promote aggregation models (FPOs, cooperatives) for stronger market access

Long-Term Pathway (2047)

Smart Monitoring and Automation

- Implement legal mandates for IoT-based real-time monitoring in warehouses and transport units with automated compliance tracking
- Deploy predictive AI models integrating market trends, weather patterns, and consumer behaviour for accurate demand forecasting

Skills and Institutional Development

- Establish specialised vocational institutes offering certifications in cold chain logistics, automated packaging, and AI-driven inventory management

Green and Resilient Logistics

- Scale adoption of solar-powered refrigeration and renewable energy-driven cold chains, with incentives for eco-certified logistics and low-emission transport solutions

Global Collaboration

- Form cross-border partnerships for knowledge exchange on post-harvest innovations, creating global research alliances

Post-Harvest Management and Market Linkages

- Standardise processing and milling protocols for key crops (rice, onion, tomato, potato)
- Strengthen horticultural and dairy supply chains with improved planting material, traceability, and export-quality standards

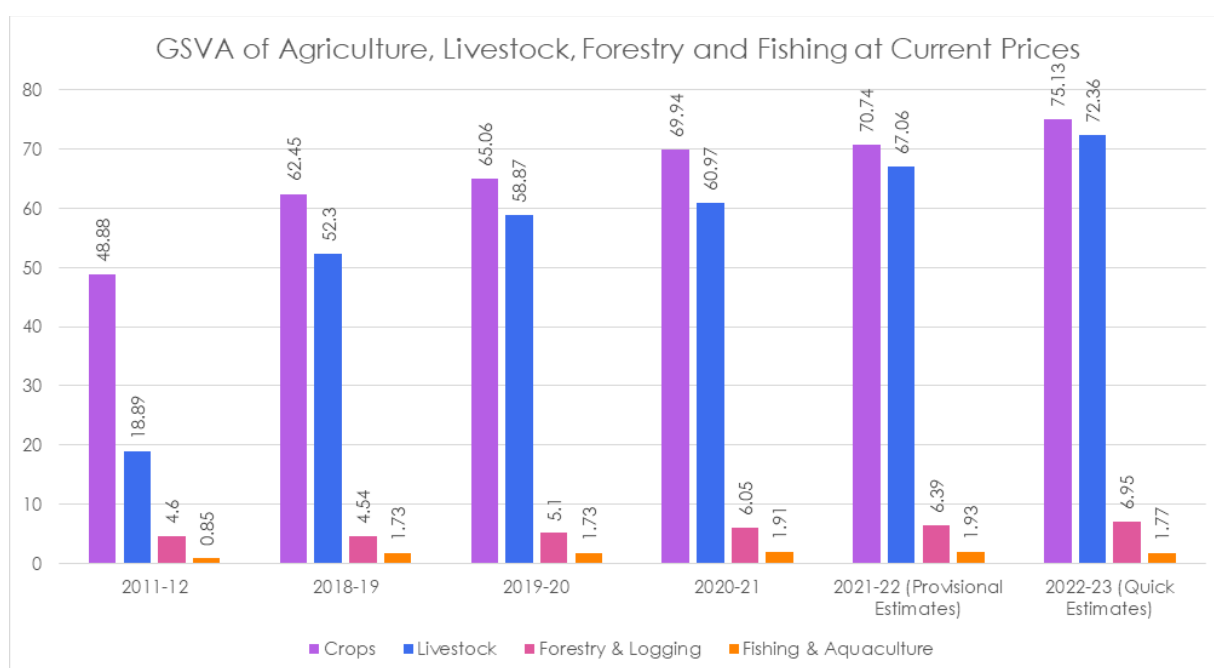
ISSUE 5: ECONOMIC VIABILITY AND MARKET ADAPTATION

Economic viability and market adaptation represent cornerstone challenges for Haryana's agricultural transformation. While innovative initiatives like "Mera Pani Meri Virasat" (providing INR 7,000 per acre in 2023, increasing to INR 8,000 in 2025-26)⁷⁶ demonstrate policy commitment, significant obstacles remain in transforming traditional farming into profitable business enterprises. Despite substantial insurance payouts under

PMFBY (INR 8,540.18 crore from Kharif 2016 to 2023),⁷⁷ farmers continue to face coverage gaps and payout uncertainties. The sector's robust economic foundation—contributing INR 88,450.02 crore to GSVA⁷⁸ and generating exports worth INR 14,396.57 crore from 1.39 million metric tonnes⁷⁹—provides a solid base for growth, but requires strategic interventions in diversification, value addition, market linkages, and price stabilisation to ensure sustainable profitability and resilience in an increasingly volatile market environment.

Current Status

- ✔ "Mera Pani Meri Virasat" scheme: INR 7,000 per acre (2023),⁸⁰ increasing to INR 8,000 per acre (2025-26)⁸¹
- ✔ State budget allocation for the scheme: INR 70 crore (2023)⁸²
- ✔ PMFBY claims paid in Haryana: INR 8,540.18 crore (Kharif 2016 to Kharif 2023)⁸³
- ✔ GSVA for Agriculture (Crops and Livestock) at constant prices: INR 88,450.02 crore (2024-25)⁸⁴
- ✔ Agricultural exports (2022-23): 1,394,010.10 metric tonnes valued at INR 14,396.57 crore⁸⁵



Graph 29: GSVA of Agriculture, Livestock, Forestry and Fishing at Current Prices (INR crore)
(Source: Department of Economic and Statistical Affairs, Haryana. Statistical Abstract of Haryana 2022-23)

Factors Influencing the Issue

- **Government Initiatives:** MSPs, procurement systems, and subsidy structures create essential safety nets for farmers.
- **Market Evolution:** Changing domestic and international market demands present both opportunities and vulnerabilities.
- **Digital Platforms:** Technology advancement in market information systems bridges information asymmetries between producers and consumers.
- **Financial Infrastructure:** Access to credit, comprehensive insurance products, and investment capital enables farm modernisation.
- **Physical Infrastructure:** Quality of storage, processing facilities, and transportation networks directly impact market access.

- **Climate Volatility:** Unpredictable weather patterns introduce fundamental uncertainty into production planning and market supply.
- **Knowledge and Capacity Gaps:** Limitations in business management, marketing, and value addition techniques hinder profitability.
- **Value Chain Integration:** Degree of vertical integration in agricultural value chains affects income distribution among stakeholders.
- **Labour Market Dynamics:** Prevalence of disguised unemployment, seasonal work, and low wages impact farmer income and rural livelihoods.
- **Diversification Opportunities:** Growing demand for experiential tourism and rural getaways creates avenues for agri-tourism.

Impacts of the Issue

Direct Impact

- Increased profitability and income stability through effective market strategies and insurance
- Greater farmer confidence and willingness to invest in innovation
- Reduced disguised unemployment and improved wages for agricultural labour.
- Creation of new supplementary income streams for farmers and rural households through agri-tourism activities

Indirect Impact

- Enhanced agricultural investment and technology adoption, improved productivity and competitiveness, strengthened resilience to market fluctuations, long-term economic growth and sustainability
- Improved access to financial resources, enhanced market integration, expanded agricultural value chains, diversified rural economy and accelerated regional development
- Enhanced rural livelihoods, reduced migration, and a more stable agricultural workforce
- Stimulation of local economies, preservation of rural heritage, and enhanced community engagement

Global Learnings

Global Best Practice⁸⁶

Philippines' Cacao Value Chain Integration for Smallholder Prosperity

In the Philippines, a collaborative initiative involving the Mennonite Economic Development Associates (MEDA),⁸⁷ Kennermer Foods International, and Mars Inc. has successfully integrated over 1000 smallholder

Disruptive Technologies - Enhancing Agricultural Sustainability Through Crop Diversification

Crop diversification offers resilience against pests, diseases, and climatic variations, ensuring stable incomes for farmers and fostering biodiversity. By reducing reliance on monoculture farming it promotes healthier soils, decreases chemical inputs, and mitigates the impact of pests and diseases. Diversified farming practices optimise

farmers into the global cacao value chain. This programme provides comprehensive support, including technical training in Good Agricultural Practices (GAP), access to financing, and market linkages. By intercropping cacao with existing coconut plantations, farmers diversify their income sources and enhance land productivity.

resource utilisation, leading to increased productivity while minimising environmental harm. For instance, wheat-legume intercropping in France increased the land equivalent ratio (LER) by 11% to 32% and reduced weed biomass by 50% to 90%. Similarly, Asian countries' shift towards high-value crops has boosted land productivity and created employment opportunities in the agricultural sector.⁸⁹

Possible Pathways

Short-Term Pathway (2030)

Farmer Training and Capacity Building

- Allocate government and private sector funds for targeted farmer training in market analysis and business management
- Launch digital and on-field training initiatives on precision farming and post-harvest technologies
- Introduce skill development programmes focused on advanced farm machinery operation, post-harvest processing, and digital agriculture to enhance labour productivity and wages

Market Intelligence and Risk Mitigation

- Deploy AI-powered mobile applications offering real-time price trends and market intelligence for optimised production planning
- Implement dynamic pricing models backed by AI-driven market forecasting and minimum price guarantees to protect farmers from extreme market volatility
- Develop robust digital commodity trading platforms, integrated with existing market information systems, to facilitate transparent and efficient trading of commercial crops

Strengthening Commercial Agriculture

- Introduce financial subsidies and tax breaks for farmers adopting high-value crops with processing industry support

Long-Term Pathway (2047)

Global Market Integration and Trade

Infrastructure

- Forge trade agreements with key international markets, establishing direct procurement channels and standardised quality benchmarks
- Create government-backed financial schemes for cold chain logistics, export certification, and global supply chain integration
- Expand specialised training institutes offering advanced courses in agri-business management, export compliance, and technological innovation
- Incentivise large-scale aggregation and professional management of commercial crop value chains with low-emission processing systems, green certification, and sustainable export infrastructure to boost farmer share in global markets

Digital and Predictive Market Intelligence

- Deploy predictive AI models analysing climate trends, soil health, and market demand for real-time farm optimisation and risk management
- Establish a national framework for commodity market intelligence, utilising AI and blockchain to provide comprehensive real-time data on commercial crop supply, demand, and global price movements, ensuring fair and efficient trading

Short-Term Pathway (2030)

- Establish direct contracts between farmers and agribusiness firms, enabling guaranteed buybacks and price stability mechanisms

Agri-Tourism Promotion

- Launch pilot projects and provide seed funding for farmers interested in developing agri-tourism ventures (e.g., farm stays, guided tours, local produce sales)
- Develop marketing platforms and partnerships with tourism agencies to promote agri-tourism circuits in Haryana

Rural Enterprise, Tourism, and Income

Diversification

- Develop secondary agriculture enterprises—food processing, herbal products, bio-inputs, and agri-handicrafts
- Promote agri-tourism corridors such as “Millet Heritage Trail” or “Organic Farm Stays”

Long-Term Pathway (2047)

Sustainable Rural Employment and Labour Welfare

- Develop a comprehensive rural employment policy focusing on year-round agricultural and allied sector opportunities, including value-added processing and agri-logistics
- Implement fair wage guidelines and social security schemes for agricultural labourers, leveraging digital platforms for transparent payments

Agri-Tourism Ecosystem Development

- Establish a dedicated Agri-Tourism Development Board to provide policy support, infrastructure development, and capacity building for rural communities
- Integrate agri-tourism into regional development plans, creating comprehensive rural economic zones that link farming, processing, and tourism

Rural Enterprise, Tourism, and Income

Diversification

- Scale up agripreneurship ecosystems with youth and women-led start-ups
- Link agri-tourism and rural enterprises with digital marketplaces and export promotion networks

ISSUE 6: AGRARIAN REFORM AND INNOVATIVE MARKETS

Haryana's agricultural landscape faces structural challenges that demand fundamental reforms alongside market innovation. With 68.57% of farming households operating as small or marginal farmers (holding less than two hectares),⁹⁰ fragmentation severely limits economies of scale and investment capacity. Haryana must address its fragmented landholding structure and strengthen its 460 FPOs⁹¹ to seize diversification opportunities in the rapidly growing alternative protein markets (projected to reach USD 1.21 billion by 2029)⁹². This structural reform should align with the aggressive promotion of nutri-cereals, where resource efficiency and climate resilience are focal points for the coming years, particularly by elevating crops like bajra, maize, barley, and chickpea to staple food status alongside rice and wheat. This convergence will create pathways for inclusive growth across the state's small and marginal farming communities. These concurrent developments offer a powerful convergence point where structural reforms in landholding and organisation can align with high-value, future-oriented market opportunities, creating pathways for inclusive growth that reach across Haryana's diverse farming communities. To ensure such “future-ready markets” are resilient and globally aligned, reforms must also embed zoonotic disease risk management and food safety capacity-building—strengthening consumer confidence, export potential, and overall agrarian sustainability.

Current Status

- ✔ FPOs: 460, including Farmer Producer Companies⁹²
- ✔ Land Distribution: 87% of Indian farmers cultivate less than two hectares; 69% own less than one hectare⁹³
- ✔ Plant-Based Meat Market in India: 135 million USD (2023), projected to quadruple by 2030⁹⁴
- ✔ Indian Plant Protein Market: 0.91 billion USD (2024), projected to be 1.21 billion USD by 2029⁹⁵
- ✔ Farmer demographics: Marginal farmers (49.29%), small farmers (19.28%), others (31.43%)⁹⁶
- ✔ Small and marginal farmland areas (2015-16): 3,91,705 hectares and 4,59,439 hectares respectively⁹⁷

Factors Influencing the Issue

- **Land Fragmentation:** Small, scattered holdings and absentee landlordism fundamentally constrain operational efficiency and modernisation potential.
- **Policy Environment:** Land leasing regulations, cooperative formation rules, and collective marketing laws determine consolidation feasibility.
- **Emerging Consumer Preferences:** Growing demand for plant-based and alternative proteins creates new value chain opportunities.
- **Technological Innovation:** Advancements in food processing, alternative protein development, and market platforms enable market access for smaller producers.
- **Access to Finance:** Availability of specialised funding mechanisms determines innovation capacity, particularly for FPOs and agri-startups.
- **Knowledge Ecosystem:** Linkages between research institutions and farmer groups are essential for innovation transfer.
- **Community Cohesion:** Existing cooperative traditions and social structures influence collective approaches to market access.
- **Supply Chain Development:** Infrastructure for specialised handling, processing, and preservation of novel products affects market viability.

Impacts of the Issue

| Direct Impact | Indirect Impact |
|--|---|
| <ul style="list-style-type: none"> • Consolidated landholdings improving economies of scale and input access • Strengthened FPOs improving market linkages and collective bargaining • Access to emerging alternative protein markets | <ul style="list-style-type: none"> • Improved land tenure security, increased long-term investments, greater agricultural productivity, enhanced technology adoption, better credit access, and reduced socioeconomic disparities • Enhanced access to services and inputs, increased income stability, diversified income sources, facilitated technology adoption, and strengthened rural economies • Adoption of innovative technologies, developed supply chains, increased R&D investment, diversified income sources, new rural employment opportunities, and enhanced food security through nutritional diversification |

Global Learnings

Global Best Practice

Netherlands' Leadership in Plant-Based Meat Innovation

The Netherlands has emerged as a global leader in the development and promotion of plant-based meat alternatives. Companies like The 'Vegetarian Butcher' and 'Meatable' are at the forefront, utilising advanced technologies to create products that mimic the taste and texture of traditional meat. This shift not only caters to changing consumer preferences but also addresses environmental concerns associated with conventional livestock farming.⁹⁸

Disruptive Technologies - Innovating Plant-Based Protein: Shear Cell Technology

A Dutch startup is set to deploy shear cell technology, a novel approach to texturising plant-based proteins, at a commercially viable scale this summer. This innovative method employs heat and pressure to mimic the texture of animal proteins, offering precise control over the final product's texture. Unlike high-moisture extrusion cooking processes, shear cell technology typically requires less energy and enables the creation of whole cuts with enhanced texture.⁹⁹

Possible Pathways

Short-Term Pathway (2030)

Land Access and Institutional Reforms

- Revise agrarian policies to streamline land leasing frameworks, enabling smallholders to access larger contiguous plots

Farmer Collectives and Inclusive Growth

- Introduce direct subsidy programmes and tax exemptions for small farmers joining FPOs to enhance collective market bargaining power
- Collaborate with financial institutions and NGOs to provide mentorship and digital advisory services for FPO-led sustainable farming
- FPOs for Animal Husbandry and Dairy-Support the creation and strengthening of FPOs in the animal husbandry and dairy sectors, with strong linkages to technology incubation centres, research institutions, and extension agencies

Data-Driven Agricultural Planning

- Deploy AI-enabled tools for analysing land use efficiency, crop yields, and market trends for data-driven decision-making

Long-Term Pathway (2047)

Tenancy Rights and Legal Reforms

- Protect tenancy rights and ensure equitable land distribution through new legal provisions, fostering trust and stability for cultivators

AgriTech Innovation and Sustainable Production

- Establish targeted funding and incubation for agritech to promote AI-driven, climate-smart farming systems, sustainable protein production, and low-emission yield optimisation aligned with fair market price discovery
- Fund state-of-the-art biotechnology labs and pilot units for cultivated proteins and dairy alternatives, leveraging AI-driven automation and blockchain traceability for ethical sourcing and transparent pricing.

Global Partnerships and Trade Integration

- Form bilateral trade agreements and global research partnerships for climate-smart food ventures, integrating blockchain for secure and transparent international trade and equitable value distribution

Short-Term Pathway (2030)

Sustainable Agro-Logistics Infrastructure

- Upgrade rural road networks and establish energy-efficient agro-logistics hubs with renewable-powered cold storage and direct farmer-market linkage platforms

Innovation and Incubation for Plant-Based Protein Enterprises

- Promote R&D and incubation for plant-based protein enterprises through a dedicated innovation hub.

Long-Term Pathway (2047)

Digital Supply Chain Transparency

- Implement a national, integrated framework of blockchain-led digital ledgers and IoT-powered sensors across the agricultural supply chain for real-time, immutable records, product authentication, end-to-end traceability, and dynamic, data-driven fair pricing

BIG ACTIONS

1. Zero Burn, Green Return Initiative

A bold push to eradicate stubble burning by converting crop residues into biofuels and organic fertilisers, while scaling drip irrigation and eco-friendly farm practices—turning a pollution challenge into a sustainable revenue opportunity.

2. Agri-Tech City & Smart Storage Network

The state will develop a pioneering Agri-Tech City with vertical farms, agribusiness incubators, and precision labs, alongside an AI-driven cold storage and logistics network to halve post-harvest losses.

3. Sky Harvest 2047

A state-led campaign that harnesses advanced drones, robotic harvesters, and AI-driven precision tools to perform seeding, spraying, and crop monitoring, drastically cutting resource usage and operational costs.

WORKING GROUP - 4

Departments

- | | | | |
|--|-------------------------------|---|---|
| 1. Department of Agriculture and Farmers Welfare | 2. Department of Horticulture | 3. Department of Animal Husbandry & Dairying | 4. Environment, Forest, and Wildlife Department |
| 5. Department of Fisheries | 6. Department of Cooperation | 7. Food, Civil Supplies & Consumer Affairs Department | |

Timeline

29/08/2023



First meeting was held at Registrar Cooperative Societies Haryana, Bays 27-30, Sector 2 Panchkula

23/01/2024



Second meeting was held at Registrar Cooperative Societies Haryana, Bays 27-30, Sector 2 Panchkula. (Participants - 15)

15/03/2024



The Strategic Foresight Workshop convened at Hotel Mountview, Sector 10, Chandigarh. (Participants - 63)



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GROWTH ENABLERS & INFRASTRUCTURE DEVELOPMENT



WHERE ARE WE?

Strengths

- Robust Logistics Infrastructure, Extensive Road Network and Expanding Metro Connectivity
- Ease-of-Doing Business and Growing MSME Sector
- Strong Export Performance
- Improved Power Efficiency, Solar Energy Expansion and Biomass Utilisation Initiatives
- Extensive Digital Payment Adoption

Areas of Improvement

- R&D Investment Gaps and Tech Adoption Costs
- Job Creation Beyond Agriculture
- Green Tech Affordability and Rural Digital Access
- Balanced Industrial Spread and Low Industrial Land Availability
- Subsidy Targeting Efficiency
- Water Conservation Measures
- EV Battery Recycling Infrastructure

Opportunities

- EV Uptake
- Carbon Credit Markets
- Startup Ecosystem Growth
- E-Waste Recycling Policy and Circular Economy Promotion
- 6 GW Solar Target
- UHF/VHF Communication Rollout
- Real Estate Monetisation
- International Horticulture Market
- Aviation Hub Development
- Green Hydrogen and Derivatives
- Semiconductors

Threats

- High Technology Costs, Outdated Manufacturing Practices, and Limited Industrial Expansion Space
- Cybersecurity Vulnerabilities
- Labour Unrest Risk
- Carbon Emissions Rise; Climate Change Impacts and EV Environmental Hazards
- IT Services Obsolescence
- Urban-Rural Infrastructure Divide, Perpetuating Disparities in Digital Access, Job Opportunities, and Essential Services

WHERE DO WE WANT TO GO?



VISION

Haryana's approach towards **Future-Envisioned Industrialisation** will be to ensure its infrastructure and industries are the benchmarks of innovation, sustainability, and inclusivity.



MISSION

Under its **Future-Envisioned Industrialisation approach**, Haryana will embrace AI-driven innovation, inclusive economic policies, and global sustainability standards. With its strong manufacturing base in automobiles, textiles, steel, power, and IT, the state is well-positioned to lead the way. The III Approach—AI Innovation, Inclusion, and International Alignment— will be key to ensuring sustainable and future-ready industrial growth.

GOALS

- Manufacturing Value Added (MVA) as a proportion of NSVA at current prices - 14.13%
- Percentage of GSVA in Industries Sectors (at current price) to total GSVA - 35.98%
- MSME Udyam registration per 1,00,000 population - > 5000
- Renewable energy share in total installed capacity - 70%
- AI adoption rate in the manufacturing sector - 60%

ASPIRATIONAL FUTURE

Haryana aspires to follow progressive policies and technological advancements to transform the state into a model of sustainability and innovation, where robust EV policies and a startup ecosystem drive entrepreneurship and significantly reduce pollution levels by adopting responsible waste management. Driven by the global economic shift toward sustainability, Haryana will accelerate its renewable energy transition by integrating green technologies, enhancing efficiency, and fostering cross-sector innovation, all supported by appropriate legal frameworks. This commitment to a greener future includes leveraging AI for governance and actively pursuing carbon capture technology.

HOW WILL WE REACH THERE?

Innovation & MSME Modernisation: Establish Innovation & MSME Councils, deploy Startup Officers, and streamline clearances. Promote entrepreneurship and education, and enable skill development in rural districts with strong industry linkage.

Smart & Resilient Transport Infrastructure: Legislate smart tech adoption in transport systems. Promote low-carbon logistics, multi-modal transport, and resilience planning with nature-based solutions and workforce upskilling.

Decentralised & Clean Energy Systems: Mandate renewable energy targets and microgrid integration. Accelerate clean fuel transition, grid modernisation, and carbon-neutral industrial clusters with circular economy principles.

Sustainable Infrastructure & Green Standards: Set up sustainability governance, SOPs, and financial mechanisms. Mandate energy audits, green retrofits, smart monitoring, and enforce green building codes.

Bridging Digital & Tech Divide: Form digital inclusion task forces and provide rural connectivity through public-private partnerships. Enhance digital literacy and promote universal accessibility with AI, blockchain, and quantum tech integration.

Equitable Infrastructure Access: Reform policies for inclusive infrastructure, prioritise underserved regions, and ensure climate-resilient, locally-managed systems. Use data analytics for equitable planning and future-ready networks.

Export-Ready MSMEs & Startups: Set up MSME Export Acceleration Cells to support product standardisation, certifications, and trade compliance, enabling select enterprises to become export-ready.

Global Value Chain Integration: Establish State Export Promotion Councils and facilitate access to trade finance, market intelligence, and global partnerships to integrate MSMEs into international value chains.

3 BIG ACTIONS

01

AI-Infused Industrial Corridor

03

Global Green Axis

02

She Rise 2.0

INTRODUCTION

Haryana's development journey showcases significant achievements while highlighting aspirations for the future. The state has established itself as a crucial logistics and industrial hub through transformative infrastructure projects like the Integrated Multi-Modal Logistics Hub in Narnaul and the Kundli-Manesar-Palwal (KMP) expressway. These developments have earned Haryana "Achiever" status in the Logistics Ease Across Different States ranking and recognition as a "Top Achiever" in the State Business Reform Action Plan.¹ Economic vibrancy is demonstrated through over 11 lakh registered MSMEs contributing nearly INR 2,75,245 crore in exports during FY 2023-24.² The state has also made notable progress in sustainability by reducing AT&C losses from 30.02% in FY 2015-16 to 10.48% during FY 2023-24³ and implementing green building standards across 265 certified structures.⁴

This chapter examines Haryana's current infrastructure and industrial landscape, presents a vision for 2047, and outlines strategic pathways for transformation. The state faces challenges requiring innovative solutions, including rising emissions—from 39.57 Mt CO₂e in 2005 to 75.72 Mt CO₂e in 2018⁵—and persistent rural-urban disparities in digital connectivity despite improvements in physical infrastructure. As Haryana aims to become an industrial powerhouse by 2047, it must embrace AI-driven innovation, implement inclusive economic policies that empower women and marginalised communities, and align with global sustainability standards. Through these strategic initiatives, Haryana seeks to transform its infrastructure and industrial ecosystem into benchmarks of innovation, sustainability, and inclusivity for the nation and beyond.

WHERE ARE WE?

Current Status

Infrastructure Development

- **Integrated Multi-Modal Logistics Hub in Narnaul**
- Haryana State Industrial & Infrastructure Development Corporation Ltd (HSIIDC) is developing state-of-the-art IT Parks in Panchkula, Rai, and Manesar to attract IT companies and startups
- Construction of bridges and railway overbridges
- Strengthening of Haryana Roadways Depots' infrastructure

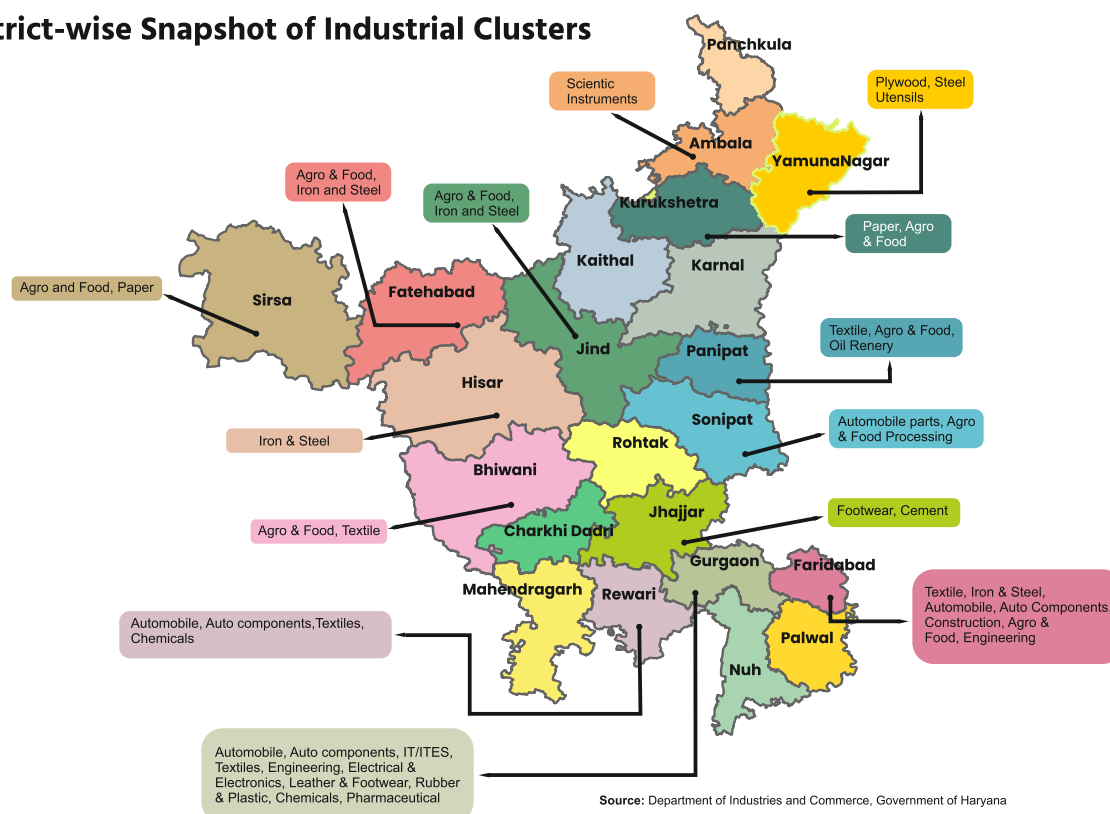
Keystone Infrastructure Projects

- **Orbital Rail Corridor**⁶ anchored alongside KMP expressway - a 121.7 km semi-high-speed rail line from Palwal to Sonapat, designed to connect major freight & passenger nodes without passing through Delhi
- **Panchgram** – Development of a hub of five super-smart cities into alternate urban centres within a 2 km corridor on either side of the 135 km KMP expressway, covering approximately 50,000 hectares and eight districts, under the PPP model
- High-speed rail connectivity between Delhi and Karnal
- Approved expansion of the **Gurugram Metro and the Regional Rapid Transit System (RRTS)**—a new metro line from Millennium City to Cyber Hub in Gurugram at INR 5,500 crores, set to improve intra-city connectivity
- Additionally, the **Namo Metro Corridor** from Serai Kale Khan to Neemrana via Dharuhera is set to redefine inter-city mobility along the Delhi-Gurugram-Rewari growth belt
- Asset monetisation through infrastructure investment trusts and real estate

Investment Thrusts

- **Global City near Manesar on Dwarka Highway** – committed to sustainability and spearheaded by HSIIDC, Phase 1 of the project is underway, covering 587 acres with a budget allocation of INR 940 crore and focused on completing roads and essential amenities like electricity & water by December 2026
- **International Horticulture Market** at Ganaur, Sonapat
- Domestic Airport at Hisar/Integrated Aviation Hub

Figure E.4:
District-wise Snapshot of Industrial Clusters



MSME Development

- A total of 18,12,180 MSME units registered under the online UDYAM registration portal, with 12,66,210 Micro, 22,847 Small, and 1,754 Medium enterprises⁷.

Programme to Accelerate Development for MSME Advancement (PADMA) - to catalyse rural industrialisation by establishing sector-specific mini greenfield industrial parks at the block level. One product in each of the 143 blocks of the 22 districts has been identified under the scheme, and its comprehensive set of support schemes ranges from capital investment subsidies to branding and export promotion.

- The PADMA Cluster Infrastructure Development Scheme (PCIDS) has also been launched to provide assistance for setting up scalable and sustainable industrial infrastructure across blocks.

Four new Industrial Clusters have been approved so far in Jind, Ambala, Faridabad, and Rewari districts.

- As per Haryana's Strategic Investment Plan (SIP) approved by MoMSME under Raising & Accelerating MSME Performance (RAMP), INR 135.17 crores to be spent over the next three years on making Haryana a competitive & resilient MSME hub.

Forward Looking Cluster Development: Cluster Plug and Play Scheme is being implemented to reduce the cost of doing business by establishing modern & affordable operating facilities equipped with essential shared infrastructure. Thirty-three projects approved, primarily in Tier II & Tier III cities, to decentralise industrial growth & empower smaller towns.

State Mini Cluster Development Scheme - implemented under Haryana Enterprises and Employment Policy (HEEP) 2020, aimed at resolving common challenges faced by micro and small enterprises by unlocking economies of scale. This scheme has operationalised 30 Common Facility Centres (CFCs) and approved 11 additional CFCs under the Government of India's Micro Small Enterprise - Cluster Development Programme (MSE-CDP) scheme.

- The state has identified **56 MSME clusters** across 21 districts, demonstrating a widespread focus on decentralised industrial growth.

Economic Development

- 100% of targeted habitations connected by all-weather roads under PMGSY⁸
- "Achiever" status in the State Business Reform Action Plan 2020 Assessment⁹
- Maintained "Achiever" position in LEADS 2023 ranking¹⁰
- Exports worth nearly INR 2,75,245 crore during 2023-24¹¹

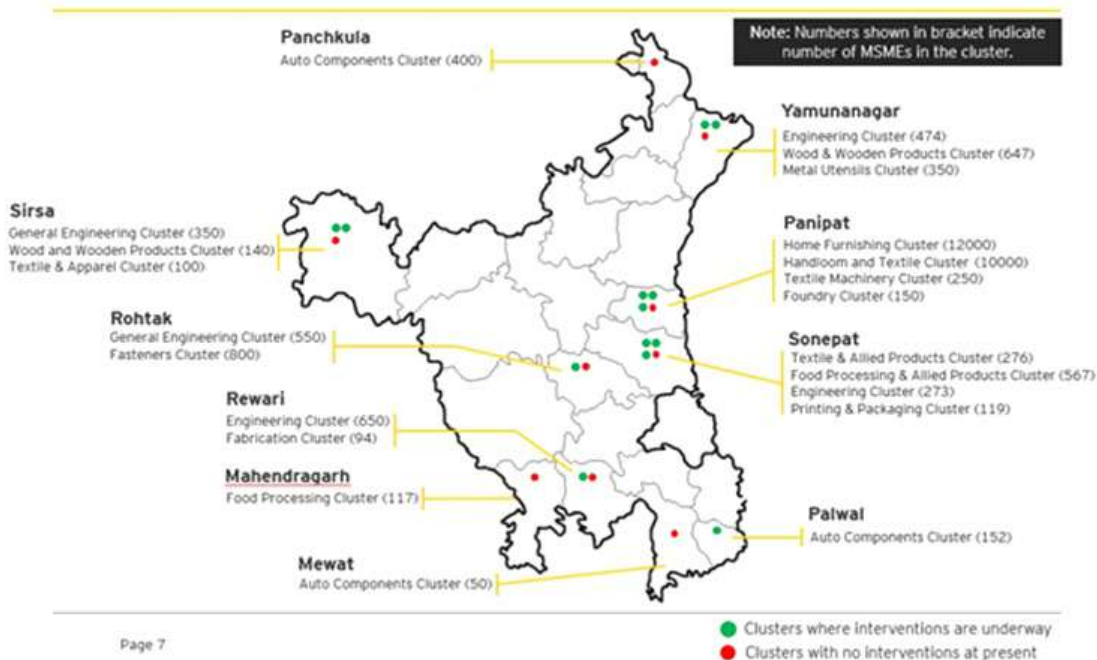
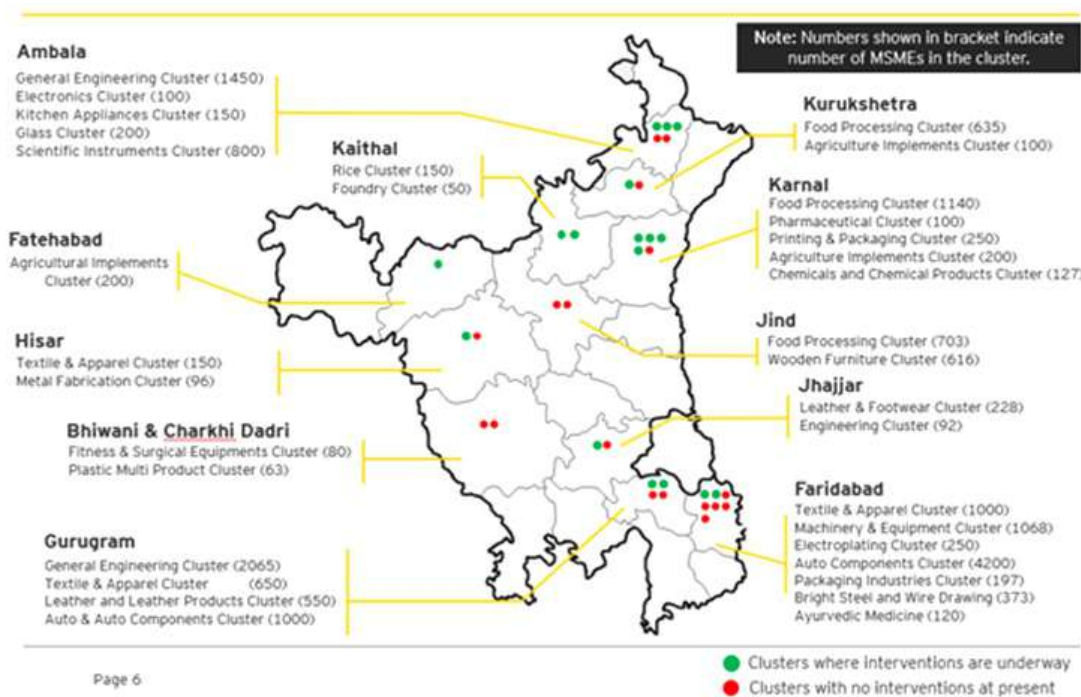
Energy Infrastructure¹²

- Total installed and contracted (2500 units from "installed" and 2100 from "contracted," totaling 4600 units) capacity of 15,936.65 MW as of 31.12.2024
- AT&C losses reduced to 10.48% during FY 2023-24 from 30.02% in FY 2015-16

Transportation Infrastructure¹³

- Total Road Network under Public Works Department (Buildings and Roads) (PWD B&R): 33,543 km
- National Highways: 3,061 km. National Highways under PWD: 330 km
- State Highways: 1,638 km
- Major District Roads: 1,405 km
- Other District Roads: 27,109 km
- Landmark allocation of INR 3,416 crores to strengthen Haryana's Rail network in the Union Budget 2025-26

PM Gati Shakti: Institutional mechanism viz. Empowered Group of Secretaries (EGoS), Network Planning Group (NPG) and a dedicated Technical Support Unit (TSU) have been put in place by the Department of Industries & Commerce to plan **ten major projects (exceeding INR 100 crores)** using the Gati Shakti Portal by December 2025.



Source: <https://msme.haryana.gov.in/clusters/>

FUTURES TRIANGLE (*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

To effectively assess Haryana's infrastructure and economic landscape, we must understand how historical investments, present forces, and future opportunities interact to shape development trajectories. The Futures Triangle analysis examines these three dimensions—past weights, present pushes, and future pulls—to identify the dynamic tensions influencing Haryana's growth path. This analysis reveals how legacy systems and policies create inertia, how current initiatives generate momentum, and how emerging trends exert gravitational pull toward new possibilities. By mapping these intersecting forces, we can identify strategic interventions that

leverage strengths, address constraints, and navigate toward Haryana's vision of becoming an infrastructure and industrial powerhouse by 2047. The following analysis highlights critical factors across all three dimensions that will determine whether Haryana achieves incremental improvement and transformative change in its development journey.

Pushes of the Present

Positive

Economic growth and job creation through the **Haryana Enterprise & Employment Policy 2020**

Investment and innovation in the **electronics manufacturing ecosystem**

Agricultural sustainability enhanced through **Solar Water Pumping Programmes** and biomass utilisation

Sustainable energy initiatives implemented in government buildings

Equitable access to clean energy extended to remote areas

Sustainable transportation promotion through EV adoption

Widespread **adoption of solar energy** through low-cost panels

Seamless digital payment systems enhancing **financial inclusion in rural areas**

E-commerce and metro systems generating employment opportunities

Carbon credits and e-waste recycling driving sustainability efforts

Negative

Costly technologies requiring substantial investments for a green transition

Limited budgetary allocation for research and development initiatives

Labour unrest, potential job displacement, and high capital expenditures

Concerns about the effectiveness and targeting of **subsidy programmes**

Water scarcity, rising carbon emissions, and climate change vulnerabilities

Rapid technological advancement causing the obsolescence of existing IT services

Pulls of the Future

Positive

EV policies and foreign investment **reducing energy costs and pollution**

Haryana Startup Policy boosting innovation and entrepreneurship

Draft E-Waste Recycling Policy promoting the circular economy

Upcoming **Haryana Solar Policy targeting** 6 GW of renewable energy by 2030

Implementation of **UHF/VHF communication** for reliable channels in challenging situations

Carbon Capture Technology promising significant Co₂ emission reduction

Negative

Inadequate regulation frameworks for emerging technologies

Environmental challenges from EV battery production and disposal

High acquisition costs for advanced technologies and robotics

Limited availability of **cost-effective land** for industrial expansion

Rising cybersecurity threats jeopardising digital infrastructure and data

Weights of the Past

Positive

Effective policy frameworks fostering innovation and **renewable energy adoption**

Haryana's Ease of Doing Business policies reducing gender and regional disparities

Improved road infrastructure promoting balanced regional growth and connectivity

Increased GST collection strengthening fiscal resources for development

Biomass utilisation providing additional income to farmers while promoting sustainability

Negative

Urban-focused policies exacerbating the rural-urban infrastructure divide, leading to imbalanced development and persistent gaps in access to digital infrastructure, job opportunities, and essential services

Limited job opportunities outside agriculture driving **rural-urban migration**

Restricted internet access in rural areas hampering information distribution

High technology costs hindering widespread adoption and innovation

Outdated manufacturing technologies contributing to environmental pollution

Negative

Overconcentration of industrial infrastructure in the National Capital Region

WHERE DO WE WANT TO GO?

VISION 2047

By 2047, Haryana's approach towards Future-Envisioned Industrialisation will be to ensure its infrastructure and industries are the benchmarks of innovation, sustainability, and inclusivity. With a focus on green, smart, and accessible infrastructure, we are committed to bridging disparities and transforming our energy, logistics, and digital landscapes to pave the way for excellence in both economic metrics and quality of life.

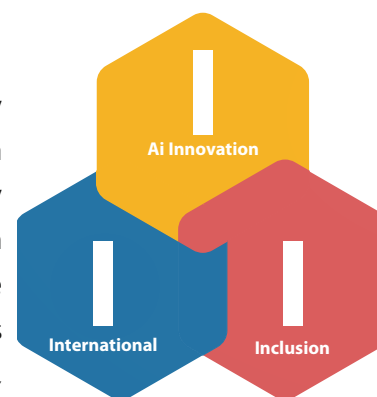
- Position Gurugram as Asia’s Premier Services Hub through cutting-edge finance, technology, and creative industry infrastructure
- Create Future-Ready Cities via the Panchgram Plan to reduce regional disparities and drive balanced urban growth
- Strengthen the Innovation Ecosystem by accelerating R&D in high-value sectors like space tech, aerospace, and defence
- Advance Industries with Globally Aligned Sustainability Policies, fostering circular economy and net-zero growth models
- Modernise Supply Chains and Logistics Infrastructure through innovative, multi-modal, and low-emission transport networks
- Ensure Green, Affordable, and Reliable Energy Access, focusing on clean fuels, renewables, and decentralised energy systems
- Implement Climate-Resilient Infrastructure Standards to promote green buildings, innovative retrofits, and sustainable urban design
- Bridge Rural-Urban, District, and Gender Disparities through inclusive, data-driven infrastructure planning and targeted investments, including dedicated rural infrastructure development to reduce migration pressures and ensure equitable access to digital infrastructure, job opportunities, and essential services.

STRATEGIC MISSION* : Future-Envisioned Industrialisation – The III Approach

Haryana stands at the cusp of industrial transformation, poised to leverage its established manufacturing base across automobiles, textiles, steel, power, and IT sectors to become a global industrial powerhouse. The state's strategic approach focuses on three interconnected pillars that will drive sustainable growth, social equity, and international competitiveness in the industrial landscape of tomorrow.

1. AI INNOVATION: Driving Sustainable Industrial Transformation

AI will revolutionise Haryana's industrial ecosystem, particularly in its key manufacturing sectors. The state will establish AI innovation centres in Gurugram and Panchkula, focusing on applications that enhance productivity while reducing environmental impact. In the automobile sector, where Haryana hosts India's largest manufacturing hub, AI-driven predictive maintenance systems will be deployed to reduce downtime by up to 30%. The textile clusters in Panipat and Sonipat will implement AI-enabled water recycling technologies, targeting zero liquid discharge standards. At the same time, steel manufacturing in Hisar will incorporate AI quality control systems to minimise material wastage. Additionally, advanced AI energy management platforms will optimise the state's renewable energy distribution, improving grid efficiency by an estimated 25%. Furthermore, AI-driven smart factories and automation will be promoted across MSMEs to boost efficiency and competitiveness.



2. INCLUSION: Empowering Women and Non-Binary Individuals

Haryana will address its historically low female labour force participation through targeted policy interventions across the industrial landscape. The state will mandate gender-balanced hiring practices in all new industrial projects, establish subsidised childcare facilities within 5 km of major industrial zones, and implement flexible work policies to accommodate diverse life circumstances. Special economic incentives will be provided to industries exceeding gender diversity targets, with tax benefits scaling up to 15% for those achieving complete gender parity. For entrepreneurs from underrepresented groups, Haryana will create dedicated business incubation centres with specialised mentorship programmes and priority access to government contracts, aiming to support at least 500 women-led and 100 non-binary-led enterprises annually by 2030.

3. INTERNATIONAL: Aligning with Global ESG and Digital Standards

To ensure global competitiveness, Haryana will align its industrial practices with international sustainability standards and digital transformation imperatives. The state will establish ESG compliance centres in major industrial hubs to help businesses adapt to evolving global requirements, particularly focusing on meeting the EU's Carbon Border Adjustment Mechanism standards. Carbon capture technologies will be implemented in high-emission industrial clusters like Hisar, enabling a projected 30% reduction in industrial carbon footprint by 2030. Simultaneously, Haryana will extend digital infrastructure to all villages by 2027, creating rural digital enterprise zones with specialised support for agri-tech startups and rural manufacturing units. Blockchain-based supply chain verification systems will be implemented to certify the sustainability credentials of Haryana's exports, enhancing their acceptance in environmentally conscious global markets. The potential of blockchain will also be leveraged in securing supply chains, reducing fraud in transactions, and enhancing transparency in governance.

*Aligned Departments: Industries & Commerce, MSME, Transport, Civil Aviation, Electronics & Information Technology, Power and Renewable Energy, Science & Technology, Buildings & Roads, Irrigation

GOALS

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|--|----------------------|---|-------------|-------------|-------------|--|
| MSME Udyam Registration per 1,00,000 population | 852 (2022) | Udyam Registration Portal, Ministry of MSME | 1857 | > 2970 | > 5,000 | Global average for upper-middle- income countries: ~1,800 MSMEs per 100,000 population. Target aims to double registration density by 2030, reaching levels comparable to upper-middle- income countries, and further triple by 2047 to match high-income economies like South Korea and Taiwan. |
| Percentage of households living in katcha houses | 0.2% (July-Dec 2018) | National Family Health Survey | 0% | | 0% | Singapore (0%), Japan (0%), South Korea (0.05%). Targets the complete elimination of inadequate housing by 2030, aligning with SDG 11 (Sustainable Cities and Communities). |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|------------|--|-------------|-------------|-------------|---|
| Public transport trips per 1,000 population per day | 95 (2021) | Haryana Transport Department Annual Report | 180 | 222 | 300 | Singapore (240), Hong Kong (270), European average (150). Target supports sustainable urban mobility and aligns with the National Urban Transport Policy goals of increasing public transport modal share. The 2047 target matches the current high-performing sustainable transport systems. |
| Logistics Performance Index (LPI) score | 3.2 (2022) | LEADS Report 2022, Ministry of Commerce & Industry | 4 | 4.18 | 4.5 | Germany (4.2), Singapore (4.1), Japan (4.05). The 2030 target positions Haryana on par with current global logistics leaders, while the 2047 target aims to establish Haryana as a global benchmark in logistics efficiency. |
| Growth rate of manufacturing sector | 6.67% | Annexure 2 | 10.61% | 12.63% | 10.10% | Based on the research paper "Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth" |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|------------------|--|-------------|-------------|-------------|---|
| AT&C losses in power distribution | 10.48% (2023-24) | Haryana Power Utilities | 7% | 6% | 5% | Singapore (2%), Japan (4%), Germany (4%). Builds on significant progress already made (from 30.02% in 2015-16 to 10.48% in 2023-24). The 2047 target aims to achieve efficiency levels comparable to the global best practices. |
| Number of green-certified buildings per million population | 105 (2023) | Indian Green Building Council (IGBC), Green Rating for Integrated Habitat Assessment. (GRIHA) and Green Business Certification Inc. (GBCI) | 500 | | 2000 | Singapore (380), UAE (350), US (280). Aims for a 5X increase by 2030 and 20X by 2047, aligning with global leaders in sustainable building practices and supporting carbon reduction goals. |
| Carbon intensity of GSDP (tonnes CO ₂ e/INR crore) | 176 (2018) | Trend Analysis of GHG Emissions of Haryana Report | 100 | 72 | 20 | EU average (75), UK (50), Sweden (20). Supports India's nationally determined contributions under Paris Agreement. The 2047 target aligns with pathways for net-zero emissions and positions Haryana as a leader in low-carbon development. |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|--------------|---------------------------|-------------|-------------|-------------|--|
| Internet penetration rate (rural-urban gap) | 30.4% (2023) | TRAI Quarterly Reports | 10% | 7.18% | 2% | South Korea (3%), Sweden (5%), Finland (4%). Targets a dramatic reduction in digital divide, approaching current gap levels in digitally advanced economies by 2047, supporting inclusive digital growth. |
| AI adoption rate in manufacturing sector | 12% (2023) | Haryana Industrial Survey | 20% | 34% | 60% | South Korea (45%), Singapore (40%), Germany (38%). The target supports Haryana's "AI-Infused Industrial Corridor" initiative and positions the state on par with current global technology leaders by 2030, becoming a global benchmark by 2047. |

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

- Government policies continue to focus predominantly on urban development, reinforcing existing patterns of investment
- Rural-urban divide persists as limited job opportunities beyond agriculture in rural areas drive migration to urban centres
- Reliance on the primary sector continues with incremental implementation of renewable energy initiatives like the Haryana Solar Power Policy 2016
- Outdated industries contribute to increasing pollution levels despite some sustainability efforts
- Affordability issues limit widespread adoption of new technologies, affecting employment patterns and social dynamics

NEGATIVE DISRUPTIVE FUTURE (RISKS)

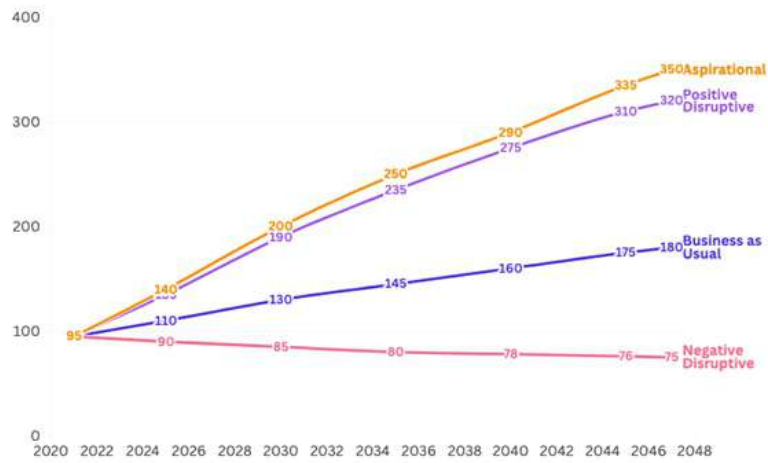
- Unregulated emerging technologies create cybersecurity vulnerabilities, financial scams, and rising unemployment
- Rapid technological advancement renders existing IT services obsolete, creating economic disruption
- Ecological challenges, including water scarcity, threaten industrial operations and environmental sustainability
- High costs of transitioning to greener technologies and regulatory hurdles impede progress
- Job displacement and widening rural-urban divide lead to social tensions without proper intervention
- Without coordinated action, Haryana faces environmental degradation, economic instability, and social unrest

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

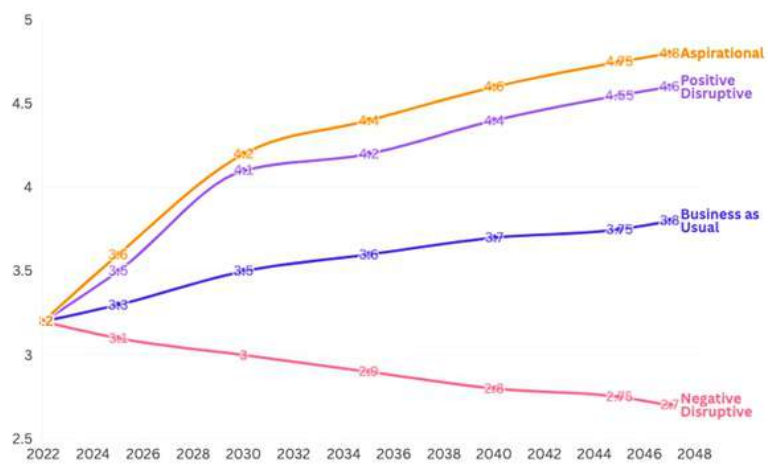
- Leveraging the Haryana Enterprise & Employment Policy 2020 and the Electronic Manufacturing Cluster Policy creates a vibrant ecosystem for innovation and entrepreneurship
- Digital payment systems and targeted subsidies bridge the rural-urban divide while addressing labour challenges
- E-commerce expansion and digital platforms generate economic growth and employment, particularly benefiting rural areas
- EV adoption and bioenergy solutions (biomass utilisation, ethanol generation) align with environmental goals
- Innovation hubs, startup incubation centres, and technology adoption programmes create pathways to economic prosperity

ASPIRATIONAL FUTURE

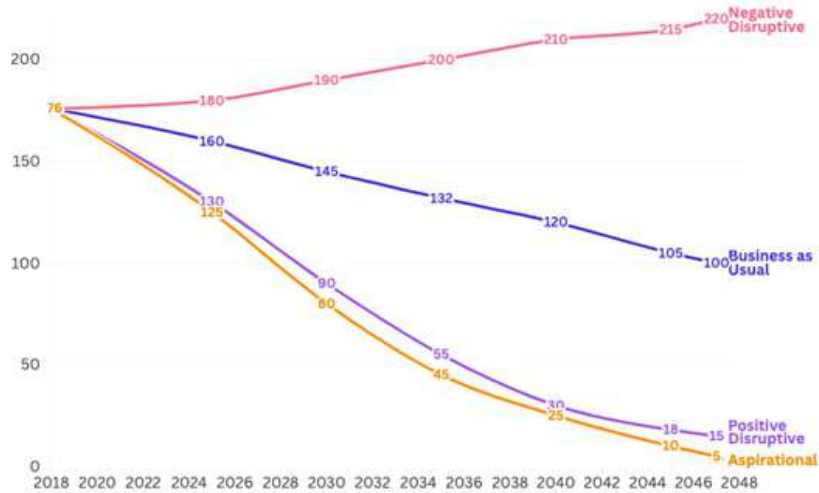
- Favourable policies and technological advancements transform Haryana into a model of sustainability and innovation
- Robust EV policies and a startup ecosystem drive entrepreneurship and significantly reduce pollution levels
- Comprehensive e-waste recycling policies ensure responsible waste management
- Global economic shifts toward sustainability accelerate the transition to renewable energy sources
- Integration of green technologies enhances efficiency and fosters innovation across sectors
- Legal frameworks leveraging AI ensure transparency, while carbon capture technology demonstrates a commitment to a greener future



Graph 30 (a): Public Transport Trips per 1,000 Population per Day



Graph 30 (b): Logistics Performance Index (LPI) Score



Graph 30 (c): Carbon Intensity of GSDP (tonnes CO₂e INR crore)

HOW WILL WE REACH THERE?

To effectively channel resources and personnel towards our vision, we need to tackle key challenges head-on. This includes fostering innovation and startup culture, modernising local businesses, and transforming logistics for energy efficiency. Ensuring green, affordable energy and decentralised grid management are crucial for sustainability. Embracing green technology standards and bridging digital divides are also priorities. Addressing rural-urban and gender disparities in infrastructure is essential, as is adapting industries to meet global sustainability standards and leveraging emerging technologies.

Issues

- 🔍 Promoting Innovation and Start-up Culture and Modernisation of Local MSMEs
- 🔍 Transform Supply Chain Logistics and Transport Infra to be Energy Efficient, Resilient, Smart, Green, Affordable and Accessible Energy and Decentralised Grid Management
- 🔍 Adopting Sustainable, Green Technology Standards, SOPs for Infrastructure and Building
- 🔍 Bridging Multi-Dimensional Digital Divide and Integrating New Technologies for Seamless Public Services
- 🔍 Addressing Rural-Urban/District/Gender Disparities through Accessible Infrastructure
- 🔍 Bridging Disparities through Inclusive and Equitable Infrastructure

ISSUE 1: PROMOTING INNOVATION AND START-UP CULTURE AND MODERNISATION OF LOCAL MSMEs

Haryana is strategically positioning itself as a hub for innovation and entrepreneurship by developing a robust ecosystem for startups and modernising local MSMEs. The state's initiatives are aimed at creating an environment conducive to business growth, technological advancement, and economic development. With targeted policies, infrastructure development, and support mechanisms, Haryana is nurturing a culture that encourages risk-taking, creativity, and business transformation, enabling both new ventures and established MSMEs to thrive in an increasingly competitive global landscape.

Current Status

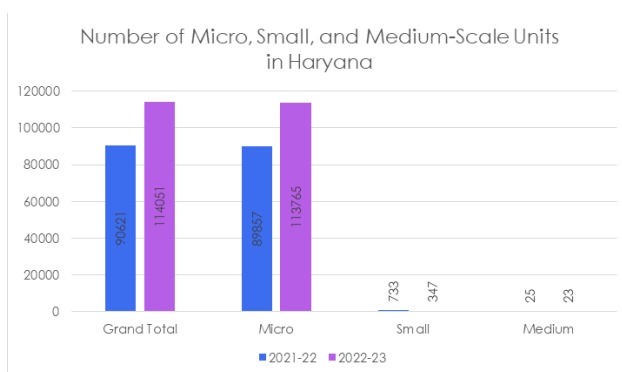
- ✔️ **MSME Registration:** MSME Registration: A total of 1812180 MSME units registered under the online UDYAM registration portal, with 1266210 Micro, 22,847 Small, and 1,754 Medium enterprises¹⁴
- ✔️ **Investment Profile:** Substantial investments across MSME segments, with Micro enterprises attracting INR 1,272.85 crore, Small enterprises INR 304.46 crore, and Medium enterprises INR 409.42 crore.¹⁵ Haryana Aerospace and Defence Production Policy 2022 is paving the way for Haryana as an Aerospace Hub
- ✔️ **Global Information & Market Facilitation Team (GIFT):** Setting up a one-stop export facilitation cell to support export-oriented manufacturing & service sector MSMEs, especially in Tier II & III cities
- ✔️ **Startup Growth:** 8,800 Department for Promotion of Industry and Internal Trade (DPIIT)-recognised startups (as of April 2025) - 45% of which are led by women, and more than 30 incubators, generating employment for 77,800 individuals between 2016 and 2023¹⁶
- ✔️ **Startup Support¹⁷:** Comprehensive assistance through the Haryana State Startup Policy 2022, including:
 - Seed grants up to INR 10 lakh per startup
 - INR 2.5 lakh and INR 5 lakh support for national and international acceleration programmes

- 100% reimbursement for patent registration expenses (maximum INR 25 lakh)
- 50% net SGST reimbursement for seven years (capped at 100% Fixed Capital Investment)
- 75% cloud computing/storage expense reimbursement (up to INR 2.5 lakh annually for 5 years)
-

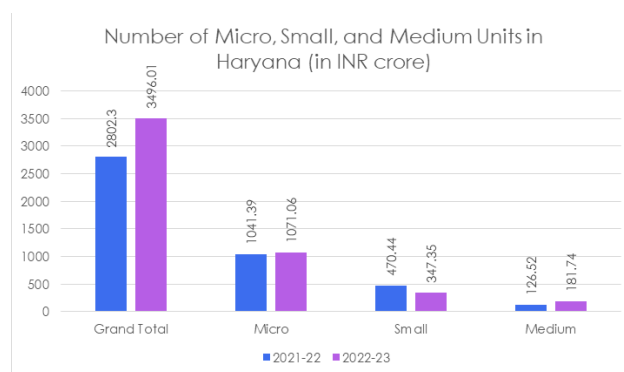
✔ **Innovation Infrastructure:** Operational support facilities including the Startup Warehouse in Gurugram (established 2018), CoE for IoT in Gurugram, and a high-precision hardware lab¹⁸

✔ **Innovation Ranking:** Haryana's Innovation Score stands at 16.35 as per India Innovation Index (2021)¹⁹

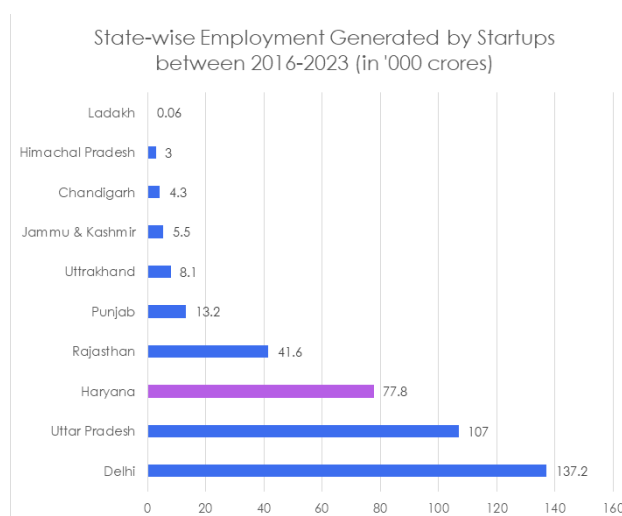
✔ **Future Development:** Position Gurugram as Asia's Premier Services Hub through cutting-edge finance, technology, and creative industry infrastructure. Global City Project in Gurugram is positioned as the next-generation Central Business District



Graph 31: Number of Micro, Small, and Medium-Scale Units in Haryana
(Source: Department of Economic and Statistical Affairs, Haryana. Statistical Abstract of Haryana 2022-23)



Graph 32: Investment in Micro, Small, and Medium Units in Haryana
(Source: Department of Economic and Statistical Affairs, Haryana. Statistical Abstract of Haryana 2022-23)



Graph 33: State-wise Employment Generated by Startups (Self-Reported) between 2016-2023
(Source: PRABHAAV Powering a Resilient & Agile Bharat for the Advancement of Visionary Startups)

Potential Sectors for Startup and MSME Growth

- ✔ **Manufacturing and Industrial Base:** The State's strong industrial foundation supports significant expansion in Auto/Auto Components, Light Engineering, and Textiles & Apparels. These sectors benefit from existing infrastructure, supply chains, and skilled labour.
- ✔ **Agro-based Industries and Food Processing:** Driven by its rich agricultural zones, Haryana is primed for growth in Agro-based industries and Food Processing. This includes opportunities for value addition, cold chain logistics, and agri-tech innovations.
- ✔ **Specialised Textile Hubs:** Regions like Panipat and Hisar are leading in Textiles and Technical Fabrics, presenting opportunities for advanced textile manufacturing and innovation.
- ✔ **Technology and Digital Services:** Gurugram's established tech ecosystem fosters thriving IT, SaaS (Software as a Service), and FinTech (Financial Technology) startups, driving innovation in software development, cloud computing, and financial solutions.
- ✔ **Emerging High-Growth Sectors:**
 - **Pharmaceuticals and Chemicals:** These industries are gaining momentum, offering scope for new ventures and expansion.
 - **Renewable Energy:** Especially in solar and green hydrogen, this sector is poised for significant development, aligning with national sustainability goals.
 - **Defense and Aerospace Manufacturing:** With dedicated government support, defense and aerospace manufacturing are emerging as key areas for high-tech industrial growth.

These diverse sectors, backed by robust infrastructure, proactive policy incentives, and a growing pool of skilled manpower, collectively position Haryana as a dynamic hub for entrepreneurial and industrial growth.

Factors Influencing the Issue

The development of Haryana's innovation ecosystem and MSME modernisation is influenced by several interconnected factors. Government policies and regulatory frameworks set the foundation for entrepreneurial activity through incentives, funding programmes, and streamlined processes. Access to capital—from venture funds to subsidies—determines the pace of innovation and business growth. Technological advancement provides MSMEs with tools to enhance productivity and market reach, while intellectual property protection safeguards innovation investments. The quality of physical and digital infrastructure significantly impacts operational efficiency and market access. Human capital development through education and skill-building programmes ensures a workforce capable of implementing and managing innovative processes and technologies. Finally, market dynamics and global competition push MSMEs to continuously evolve their business models and adopt cutting-edge practices to remain relevant.

Funding Hurdles: Startups frequently face early-stage funding constraints, with roughly 40% relying on high-interest informal credit due to limited formal banking access. A significant hurdle is low awareness of government schemes (e.g., Seed Funding, MUDRA, Stand-Up India, Startup Haryana); a SIDBI report indicates 70% of semi-urban small businesses are unaware due to inadequate outreach. To counter this, an integrated portal for startups and incubators has been launched, facilitating applications for state-sponsored schemes, and the Haryana Startup Policy 2022 offers six schemes for startups and 10 for incubators.

MSMEs, on the other hand, struggle with a lack of collateral and limited credit history, impeding traditional loan access. Inadequate financial literacy among owners often leads to poor funding decisions. In rural and semi-urban areas, restricted access to formal institutions pushes MSMEs towards informal credit. Regulatory burdens and a shortage of tailored financial products also create difficulties, as lenders frequently perceive MSMEs as high-risk, impacting financing availability.

Impacts of the Issue

Direct Impact

- **Job Creation:** New startups and modernised MSMEs directly generate employment opportunities, contributing to economic growth and stability.
- **Economic Dynamism:** Innovation-driven enterprises inject vitality into the local economy through increased competition, introduction of new products/services, and attraction of investments.
- **Technological Advancement:** The adoption of modern tools and methods directly improves productivity, quality, and operational efficiency of businesses.
- **Revenue Generation:** Improved business models and operational efficiency translate into higher revenue streams and profitability for enterprises.

Indirect Impact

- **Knowledge Ecosystem:** The promotion of innovation fosters environments conducive to knowledge sharing, collaboration, and skill development, leading to an overall enhancement of human capital in the region.
- **Supply Chain Enhancement:** Modernised MSMEs implement improved supply chain management practices, creating efficiency that benefits the broader business ecosystem.
- **Market Diversification:** Innovation-driven businesses are better equipped to identify and capitalise on new market opportunities, enhancing economic resilience through diversification.
- **Community Development:** Successful startups and MSMEs contribute to community well-being through increased local spending, infrastructure development, and philanthropy.

Global Learnings

Global Best Practice

Modular Innovation Hubs for MSME

Modernisation: The Philippines has pioneered the establishment of Modular Multi-Industry Innovation Centres (MMICs), also known as "InnoHub sa Pinas," to support MSMEs in product development and technological advancement. Spearheaded by the Department of Science and Technology (DOST), these hubs provide access to advanced equipment, technical expertise, and collaborative spaces, enabling MSMEs to innovate in sectors like food processing and nutraceuticals.²⁰

Disruptive Technologies - Exploring Possibilities with Generative Design

Manufacturers can harness the power of AI frameworks during the design phase to delve into myriad configurations for a solution. By incorporating parameters such as material types, production methods, time constraints, and budget limitations, they can thoroughly explore the potential of generative design.²¹

Possible Pathways

Short-Term Pathway (2030)

Institutional Framework Enhancement

- Establish a State Innovation and MSME Council to streamline regulatory approvals
- Deploy Startup Liaison Officers in each district
- Implement a single-window clearance system, reducing approval times by 50%.
- Operationalise a dedicated portal for Startups to centralise information on tax regulations and government schemes (e.g., SGST reimbursement, seed funding, lease rental subsidy, patent cost reimbursement from Haryana State Startup Policy 2022) to address limited awareness and streamline access.
- Simplify regulatory compliance requirements for MSMEs by reducing the number of licences and permits needed. Establish a mechanism for regular review and updating of MSME policies to ensure their continued relevance and effectiveness.

Global Trade Facilitation

- Launch "Haryana: The Non-Stop Life Force of Viksit Bharat" a global branding campaign highlighting Haryana's excellence in industrial innovation, education and skill development.
- Launch the "Haryana Global Gateway" Initiative—a platform to host biannual roadshows, global investment summits, and G2B engagement in high-potential regions (Africa, ASEAN, Middle East, EU)
- Operationalise a Single Window for Inbound Investor Facilitation, offering sector-specific support, digital investor toolkits, and grievance redressal.
- Establish a Global Cooperation Fund to support outbound delegations, pilot collaborations, and international study missions

- Create a Foreign Cooperation Dashboard for real-time tracking of design and rollout of a Foreign Cooperation Digital Dashboard, capturing Key Performance Indicators (KPIs) such as number/value of FDI MoUs signed, outbound workers placed, countries partnered.

Skill Development Acceleration

- Identify 100 high-potential rural areas for specialised skill centres
- Develop targeted training programmes in digital services, agri-tech, and green energy, green construction, smart city technologies, and sustainable urban planning.
- Partner with industries to ensure at least 70% employment placement
- Establish Haryana Global Skill Centres (HGSCs) in collaboration with HKRN, NSDC-I, and international agencies to train and place skilled youth in global markets

Digital Marketplace Creation

- Launch a comprehensive State-level MSME Marketplace Portal
- Ensure seamless logistics and payment integration
- Provide digital literacy training for MSMEs

Infrastructure Modernisation

- Implement a 5-year plan to upgrade 500 MSME clusters
- Setting up of 10 new industrial clusters in different districts under PADMA
- Introduce subsidised renewable energy adoption
- Establish public-private partnership models for connectivity wherever possible
- Strategic identification and prioritisation of investments in 3-4 core sectors such as Automotive and Evs, textiles, electronics and pharma

Short-Term Pathway (2030)

Targeted Financial & Fiscal Support for MSMEs

- **Funding Access:** Streamline loan application processes by reducing documentation requirements and implementing digital platforms for faster approvals. Promote the growth of microfinance institutions that cater specifically to MSMEs, providing more accessible financing options.
- **Tax Incentives:** Advocate with the Central Government and implement state-level complementary measures for investment allowances for capital expenditures, enabling MSMEs to invest in technology and infrastructure. Introduce state-level tax credits for R&D activities undertaken by MSMEs to foster innovation and competitiveness.

Facilitating MSME Growth and Start-up Development

- Establish District Investment Facilitation Cells as single-window platforms to assist MSMEs and local startups with guidance, approvals, and financial linkages.

Inclusive Entrepreneurship Promotion

- Create Women & Minority Entrepreneurship Funds and integrate gender-balanced hiring incentives and subsidised child-care infrastructure in industrial zones
- Develop rural incubation hubs with mentorship support
- Implement procurement policies with quotas for underrepresented groups

Export Strategy Formulation

- GIFT cell to formulate dedicated state export policy, digital export modules, targeted market intelligence support, etc.
- Formulate guidelines on green standards, carbon labelling, & circular economy practices, improving the state's global competitiveness in sustainable trade
- Develop robust district-wise export promotion plans, leveraging the One District One Product scheme to augment district export potential

Promoting Innovation and Future Technologies

- Adopt a technology-neutral policy framework encouraging clean and environment-friendly innovations across sectors.
- Promote EVs, solar energy, and green hydrogen pilots through targeted incentives and public-private collaboration.
- Establish innovation clusters and incubation hubs to accelerate commercialisation of emerging technologies.

Long-Term Pathway (2047)

Policy Ecosystem Transformation

- Formulate comprehensive state-level innovation policies aligned with industry needs
- Integrate entrepreneurship education into school curricula at the secondary level
- Establish long-term investment funds supporting high-risk innovation projects

Human Capital Development

- Embed entrepreneurship modules in vocational training programmes
- Establish partnerships with private sector entities for hands-on training
- Ensure equitable access to entrepreneurial development opportunities

Long-Term Pathway (2047)

Global Knowledge Integration

- Strengthen international partnerships through exchange programmes
- Develop specialised industry clusters facilitating collaboration
- Create incentive structures for cross-sector partnerships
- Organise an annual "Haryana Pravasi Connect Summit" to leverage diaspora expertise in innovation, investment, and mentorship.
- Leverage a structured database of the global Haryanvi diaspora to drive targeted engagement and align their contributions with Haryana's Vision 2047 goals.

Technological Advancement

- Increase R&D investment in AI, IoT, and automation solutions for MSMEs including for AI-driven smart factories and predictive maintenance.
- Establish secure data-sharing frameworks for market insights
- Create partnerships driving sector-specific technological innovation

Infrastructure Ecosystem Development

- Build 10 new Industrial Cities on the lines of Integrated Manufacturing Township (IMT) Kharkhoda, aimed at creating jobs for 50,000 locals per city

- Formulate country-specific labour mobility agreements for targeted employment in sectors like healthcare, construction, and IT
- Build the Global Haryanvi Network (GHN): An integrated digital platform for diaspora mapping, engagement, and contribution tracking.
- Develop 143 new industrial clusters of MSMEs—one in each block
- Develop smart city infrastructure, enhancing connectivity
- Build specialised industrial zones with sector-specific facilities
- Ensure affordable access to advanced infrastructure for startups

Promoting Innovation and Future Technologies

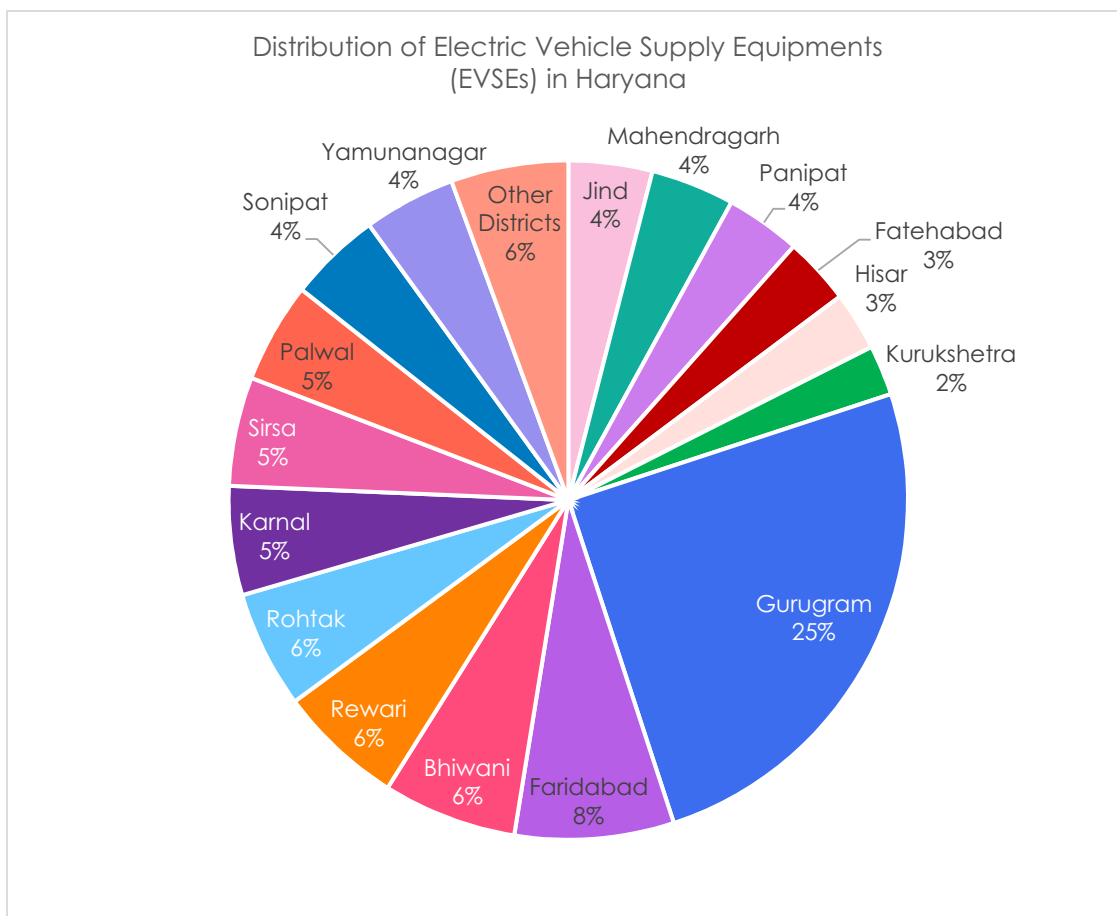
- Foster a statewide innovation ecosystem supporting all transformative technologies—AI, biotech, clean energy, advanced materials, and climate-tech.
- Position Haryana as a national leader in sustainable, inclusive technology-led growth.

ISSUE 2: TRANSFORMING SUPPLY CHAIN LOGISTICS AND TRANSPORT INFRASTRUCTURE TO BE ENERGY EFFICIENT, RESILIENT AND SMART

Haryana's strategic geographic position has established it as a crucial logistics hub in India's economic landscape. The state is undertaking a comprehensive transformation of its supply chain logistics and transport infrastructure to enhance energy efficiency, build resilience against disruptions, and integrate smart technologies. This evolution is critical for supporting industrial growth, reducing environmental impact, and maintaining competitive advantage in a rapidly changing economic environment. By modernising logistics networks and transportation systems, Haryana aims to facilitate seamless trade flows while advancing sustainability goals through reduced energy consumption and emissions.

Current Status

- ✔ **Logistics Performance:** Haryana maintains its position as an 'Achiever' in the Logistics Ease Across Different States (LEADS) report, outperforming national and group averages across all categories of logistics infrastructure²²
- ✔ **Strategic Location:** Over 60% of Haryana's area falls under the Delhi-Mumbai Industrial Corridor (DMIC) and a significant portion under the Amritsar-Kolkata Industrial Corridor (AKIC)²³
- ✔ **Infrastructure Development:** The KMP expressway and Nangal Chowdhary Logistics Park at Bawal (886 acres) are boosting logistics capabilities²⁴
- ✔ **Container Facilities:** Nine Inland Container Depots (ICDs), three Container Freight Stations (CFSs), and eight private freight terminals handling approximately 10 lakh Twenty-Foot Equivalent Unit (TEU) of container traffic annually²⁵
- ✔ **Major Logistics Hubs:** Garhi-Harsaru (Gurugram) handling up to 2,60,000 TEUs annually and ICD Piyala (Faridabad) processing around 1,50,000 TEUs²⁶
- ✔ **Private Sector Investment:** Flipkart's Regional Distribution Centre in Manesar and new grocery Fulfilment Centre in Sonipat (2023) represent significant commercial logistics development²⁷
- ✔ **Future Development:** Three Multi-Modal Logistics Parks planned for Hisar, Ambala, and Mahendragarh districts²⁸
- ✔ **EV Infrastructure:** 454 charging stations (2.9% of India's total) with the highest concentration in Gurugram (25.1% of Haryana's total) and Faridabad (7.6%)²⁹
- ✔ **EV Incentives³⁰:** Comprehensive support for the EV ecosystem, envisaged and laid out as part of the **Haryana EV Policy (2022)**, including:
 - 15% capital subsidy on Fixed Capital Investment (up to INR 1 crore) for battery disposal/recycling facilities
 - 100% stamp duty reimbursement for land/buildings used in EV manufacturing
 - 100% Electricity Duty exemption for 20 years
 - 50% cost reimbursement (up to INR 50 lakh) for water treatment plants for manufacturing units
 - Inclusive job creation offering INR 48,000 annually for 10 years for every local worker employed in the EV sector
 - Strengthening R&D with grants up to INR crores for EV technology and INR 25 lakh for building R&D capacity in 20 academic institutions
- ✔ **Haryana Registered Vehicle Scrappage & Recycling Facility Incentive Policy, 2024:** under which vehicle scrappage and recycling units are recognised as industrial units and are eligible for a range of fiscal incentives, including capital subsidy, SGST reimbursement, and venture capital support. A 10-year land leasing model further promotes the setting up of these environmentally critical units.



Graph 34: Distribution of EVSEs in Haryana
(Source: India's Public EV Charging Infrastructure Readiness – A Case Study of Haryana State)

Factors Influencing the Issue

The transformation of Haryana's supply chain logistics and transport infrastructure is driven by multiple interrelated factors. Government policies promoting sustainability and environmental conservation provide regulatory incentives for adopting energy-efficient practices. Rising operational costs, particularly fuel expenses, encourage businesses to implement smart technologies for optimising transport and logistics management. Heightened environmental awareness among consumers and stakeholders creates market pressure for sustainable supply chain operations. Technological advancements, particularly in IoT, AI, and automation, enable the development of sophisticated logistics solutions that enhance efficiency and resilience. Regulatory frameworks governing emissions, vehicle standards, and transport safety influence implementation timelines and approaches. The imperative to reduce carbon footprints and mitigate climate change impacts drives strategic investments in sustainable transport infrastructure and green logistics practices across the state.

Impacts of the Issue

Direct Impact

- **Cost Reduction:** Energy-efficient logistics systems directly lower operational expenses through reduced fuel consumption, optimised routes, and decreased maintenance requirements.
- **Enhanced Resilience:** Implementation of redundant transportation routes, real-time tracking systems, and disaster preparedness protocols directly strengthen supply chain resilience against disruptions.
- **Operational Efficiency:** Smart technologies like IoT, AI, and blockchain directly improve logistics performance through automated processes, predictive capabilities, and enhanced visibility.
- **Compliance Assurance:** Updated systems ensure adherence to evolving environmental regulations and emissions targets, reducing regulatory risks and potential penalties.

Indirect Impact

- **Environmental Conservation:** Transformed logistics operations contribute to reduced carbon emissions, minimised resource consumption, and mitigation of environmental risks, supporting broader climate goals.
- **Value Chain Optimisation:** Improved logistics enables operational enhancements across entire supply chains, increasing productivity and reducing waste throughout interconnected business networks.
- **Economic Growth Stimulation:** Modernised logistics infrastructure creates new opportunities for innovation, investment, and job creation in technology-related fields and specialised logistics services.
- **Stakeholder Collaboration:** Advanced logistics frameworks foster partnerships among government entities, private enterprises, and technology providers to develop integrated solutions for complex challenges.

Global Learnings

Global Best Practice

Electrified Last-Mile Logistics with E-Bikes and AI Routing: Germany's DHL Group has pioneered sustainable last-mile delivery by deploying over 6,100 e-bikes, 13,500 e-trikes, and 23,000 electric vans, achieving carbon-free deliveries in approximately half of its domestic service areas. This initiative not only reduces emissions but also enhances delivery efficiency; studies indicate that cargo e-bikes can be 60% faster than vans in congested urban settings. Complementing this fleet transformation, DHL employs AI-driven route optimisation to minimise fuel consumption and delivery times, illustrating an integrated approach to decarbonising urban logistics.³¹

Disruptive Technologies - Navigating Uncertainties: The Art of Scenario Planning in Logistics

Scenario planning emerges as a crucial logistics technology for navigating uncertainties within the supply chain. Leveraging digital twin technology, it simulates processes, foresees potential issues, and proposes strategic solutions. For instance, disruptions like those caused by climate change, such as droughts in key shipping routes like the Panama Canal, can be effectively managed through scenario planning. By analysing historical data, this technology can simulate the impact of such events on transportation networks and suggest alternative routes or modes to mitigate disruptions.³²

Possible Pathways

Short-Term Pathway (2030)

Policy and Incentive Framework

- Announcement of a new Haryana State Logistics, Warehousing & Retail Policy 2025 and formulating a Comprehensive Logistics Action Plan (CLAP). These will drive infrastructural development and efficiency by providing fiscal and non-fiscal incentives for multi-modal hubs (ICDs, CFS, warehouses) to shift long-haul freight from road to lower-emission rail/barge and consolidate cargo, reducing empty trips.
- Introduce enhanced tax and non-tax incentives via a revised EV Policy to accelerate electric vehicle adoption, focusing on last-mile delivery electrification, incentivising EV manufacturing and component production, and expanding charging infrastructure.
- Implement accelerated depreciation for low-carbon transport solutions and establish public-private partnerships for scaled adoption.

Resilience Planning Implementation

- Enforce regulations requiring resilience planning in all transport projects
- Mandate risk assessments for new infrastructure to mitigate extreme weather impacts
- Integrate nature-based solutions for flood-resistant and heat-adaptive infrastructure
- Develop Haryana Multi-modal Logistics Plan based on state-wide need assessment for MSME logistics infrastructure

Workforce Capacity Building

- Develop training programmes for transport workers on energy-saving techniques, green construction, smart city technologies, and sustainable urban planning.
- Partner with transport unions and logistics companies for broad participation
- Implement certification programs to standardise best practices

Long-Term Pathway (2047)

Comprehensive Legislation

- Enact comprehensive legislation mandating smart technology integration
- Define state-level standards for IoT-enabled traffic management and AI-driven systems
- Ensure compliance through incentives and phased implementation deadlines

State-Level Sustainable Logistics Strategy

- Develop a comprehensive state-level sustainable logistics strategy that champions green trucking, fuels, and technology, alongside captive solar power generation. This strategy will incentivise green logistics hubs with tax benefits and infrastructure support, promoting sustainable design standards (e.g., LEED/GRIHA) to decarbonise the sector. It will also foster multi-modal transport optimisation and low-carbon supply chains, developing Integrated Multi-Modal Logistics Parks for enhanced freight efficiency.

Centres of Excellence Establishment

- Establish centres of excellence dedicated to sustainable transport research
- Partner with universities and industry leaders for a cutting-edge curriculum
- Provide grants and fellowships to support innovation in transport sustainability

Advanced Technology Deployment

- Deploy blockchain for transparent supply chain tracking
- Implement AI-driven logistics optimisation systems
- Create real-time data exchange platforms for improved coordination

Short-Term Pathway (2030)

Research and Education Enhancement

- Offer scholarships for students specialising in sustainable transportation
- Partner with universities and industry stakeholders for research in smart mobility
- Establish mentorship programmes bridging academia and industry

Data Analytics Implementation

- Invest in advanced data collection tools for tracking efficiency and emissions
- Develop real-time dashboards for optimising energy usage and maintenance
- Deploy predictive analytics for infrastructure vulnerability assessment

EV Battery Disposal Interventions:

- Enforcing strict Extended Producer Responsibility (EPR) norms, mandating producers to ensure collection and recycling of end-of-life batteries.
- Fast-tracking environmental and hazardous waste approvals and simplifying compliance to 3–4 months.
- Setting up a dedicated nodal agency to coordinate lifecycle management and monitor KPIs.
- Enhancing targeted subsidies and tax breaks for startups and recyclers.

Emerging Industrial and Technology Hubs

- Operationalise Hisar Aviation and Integrated Manufacturing Hub as a key node for aerospace and logistics-linked industries.
- Strengthen Gurugram’s Global Capability Centres (GCCs) and attract data centres and tertiary healthcare investments.
- Develop Kurukshetra, Hisar, and Rohtak as alternate IT hubs through academic–industry linkages inspired by the Technopark Thiruvananthapuram model.

Long-Term Pathway (2047)

Zero-Emission Transportation System

- Accelerate the transition to zero-emission vehicles through expanded charging networks
- Implement strict emission reduction targets across all transport modes
- Support localised battery manufacturing and green hydrogen production
- Launch the Haryana EV for Cargo Logistics Scheme to promote electronic cargo vehicles to decarbonise MSME Logistics

Integrated Infrastructure Master Plan

- Develop a comprehensive Integrated Infrastructure Master Plan to synchronise transport, energy, and digital infrastructure for optimal resource use, reduced redundancies, and enhanced resilience. This plan will also promote transit-oriented development (TOD) and expand public transport networks, including Metro and Bus Rapid Transit Systems.

EV Battery Disposal Interventions

- Promoting cutting-edge recycling technologies (hydrometallurgy, robotic disassembly) through PPPs.
- Establishing decentralised modular recycling hubs to cut costs and risks.
- Investing in R&D through universities and industries to build indigenous circular economy solutions.

Emerging Industrial and Technology Hubs

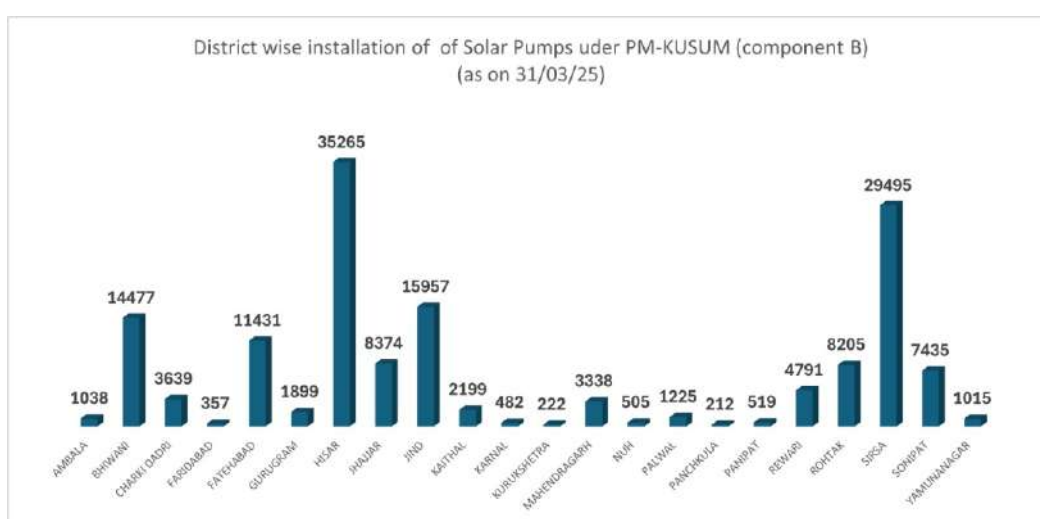
- Evolve a network of smart industrial corridors integrating advanced manufacturing, R&D, and digital infrastructure.
- Position Gurugram and Hisar as global innovation destinations for aerospace, IT, and life sciences sectors.
- Expand regional IT and innovation ecosystems across tier-2 cities for balanced development.

ISSUE 3: GREEN, AFFORDABLE AND ACCESSIBLE ENERGY AND DECENTRALISED GRID MANAGEMENT

Haryana is making significant progress toward establishing a sustainable, equitable energy ecosystem through the development of green, affordable, and accessible energy solutions coupled with decentralised grid management. This transformation is critical for environmental sustainability, economic development, and social equity. The state is strategically investing in renewable energy sources, improving grid efficiency, and ensuring universal energy access while implementing innovative approaches to grid management that enhance resilience, reduce losses, and optimise distribution. These initiatives are positioning Haryana as a leader in sustainable energy practices while ensuring that the benefits of clean energy are equitably distributed across all segments of society. The state is also providing financial incentives towards energy conservation, water audits, solar rooftop support, etc., under its various policies to encourage households and industries to adopt sustainable & green production practices.

Current Status

- ✔ **Renewable Energy Integration:** 8.06% share of renewable energy in total installed electricity generation (2020-21)³³, with a projected increase to 22.92% in state power supply (FY 2022-23)³⁴
- ✔ **Generation Capacity:** Total installed capacity of 15,936.65 MW as of December 2024³⁵
- ✔ **Distribution Efficiency:** AT&C losses reduced to 10.48% during FY 2023-24 from 30.02% in FY 2015-16³⁶
- ✔ **Solar Energy Adoption:** Approximately 3.43% of total energy generated from solar sources (2020-21)³⁷ with Haryana having the highest solar penetration after Delhi (approximately 64% as of February 2024)³⁸
- ✔ **Per Capita Capacity:** 325.08 watts per capita renewable energy generating capacity installed³⁹
- ✔ **Electrification Coverage:** 100% of villages electrified as of March 2023, serving 79,22,316 electricity connections⁴⁰
- ✔ **Solar Irrigation:** 1,52,080 solar pumps with 129.48 MW capacity installed under PM-KUSUM (component-B) by 2024-25⁴¹
- ✔ **Renewable Capacity:** 304.31 MW renewable energy capacity in Haryana in 2023-24⁴²
- ✔ **Budget Allocation:** Projected budget estimate of INR 6,772.36 crore for Developmental Revenue Expenditure on Energy in 2024-25, representing 4.7% of state expenditure (equal to the average allocation by states)⁴³



Graph 35: District wise installation of Solar Pumps under PM-KUSUM (component B) (as on 31/03/25)
(Source: New&Renewable Energy Department, Government of Haryana)

Factors Influencing the Issue

The advancement of green, affordable, and accessible energy, along with decentralised grid management in Haryana, is shaped by several key factors. Government policies and regulatory frameworks create the foundation for renewable energy adoption through targets, subsidies, and incentive structures. Economic considerations, including declining costs of renewable technologies and potential savings through energy efficiency, enhance the financial viability of green energy initiatives. Increasing public awareness about climate change and sustainability drives community support and market demand for environmentally responsible energy solutions. Technological progress in renewable energy generation, energy storage, and smart grid systems enables more efficient, reliable, and distributed energy management. Regulatory standards for energy efficiency, renewable energy integration, and grid operations provide consistent guidelines for implementation. The urgency of climate change mitigation creates an imperative for accelerated transition to low-carbon energy systems, influencing investment priorities and implementation timelines across the state.

Impacts of the Issue

Direct Impact

- **Reduced Fossil Fuel Dependence:** Implementation of green energy solutions directly decreases reliance on coal, oil, and natural gas, lowering associated pollution and resource depletion.
- **Enhanced Energy Affordability:** Strategic pricing mechanisms and subsidy structures directly reduce energy costs for consumers, particularly benefiting low-income households and small businesses.
- **Improved Grid Stability:** Decentralised management systems directly enhance distribution efficiency, reducing transmission losses and improving reliability during peak demand or extreme weather events.
- **Universal Energy Access:** Targeted infrastructure development directly ensures that remote and underserved communities gain reliable electricity connections, supporting basic needs and economic activities.

Indirect Impact

- **Job Creation:** The renewable energy sector generates employment opportunities in manufacturing, installation, maintenance, and grid management, stimulating economic development.
- **Community Empowerment:** Decentralised energy systems enable local control over energy production and consumption, fostering self-sufficiency and economic independence.
- **Environmental Preservation:** Reduced emissions from the energy sector contribute to improved air quality, water conservation, and ecosystem protection throughout the region.
- **Innovation Acceleration:** The transition to sustainable energy stimulates research and development in related technologies, creating opportunities for technological advancement and knowledge transfer.

Global Learnings

Global Best Practice

Smart Grids and Decentralised Energy Management:

Germany's energy transition emphasises decentralised energy generation and smart grid integration. Through initiatives like the SINTEG programme, Germany has developed intelligent energy systems that incorporate renewable energy sources, digital technologies, and consumer participation. The 'Smart Meter Gateway' infrastructure facilitates real-time data exchange between consumers and grid operators, enhancing demand-side management and grid stability.⁴⁴

Disruptive Technologies - Elevating Wind Energy Efficiency: Cutting-Edge Solutions and Grid Innovations

Harnessing advanced computational models and AI algorithms, wind energy optimisation is revolutionising the design and placement of turbines. This entails predictive analytics for maintenance and the adoption of noise reduction technologies to mitigate community impact. In parallel, the evolution of smart grid technology plays a pivotal role in integrating renewable energy sources. Startups are spearheading the development of sophisticated grid management systems, leveraging AI and ML to harmonise supply and demand, optimise energy distribution, and fortify grid resilience.⁴⁵

Possible Pathways

Short-Term Pathway (2030)

Micro-Grid Integration

- Develop regulations for Micro-Grid integration with the National Grid
- Establish technical standards and tariff mechanisms for decentralised generation
- Facilitate public-private partnerships to accelerate micro-grid deployment

Agro-Energy Synergy

- Formulate a Policy on Solar Cultivation promoting dual-use solar farms
- Provide financial incentives for farmers adopting agro-photovoltaic systems including mechanisms to sell unused power back to the grid for additional income.
- Develop demonstration projects showcasing productivity and energy benefits

Long-Term Pathway (2047)

Renewable Energy Mandate

- Establish legally binding renewable energy targets with annual capacity additions
- Create fast-track approval processes for renewable energy infrastructure
- Implement financial penalties for non-compliance with renewable standards

Grid-Scale Storage Deployment

- Deploy grid-scale battery storage projects in high-demand regions
- Integrate AI-driven predictive maintenance for grid optimisation
- Implement IoT-enabled autonomous controls for supply-demand balancing

Critical Infrastructure Enhancement

- Upgrade power lines and elevate substations in flood-prone areas
- Integrate real-time weather monitoring systems for proactive disaster response

Short-Term Pathway (2030)

Industrial Energy Optimisation

- Implement a renewable energy optimisation policy for high-energy sectors
- Introduce time-of-use pricing and demand-response programmes
- Establish energy auditing protocols and benchmarking systems

Clean Fuel Transition

- Implement a Cleaner Fuel Policy mandating the transition to CNG and PNG
- Offer tax incentives and infrastructure support for fueling stations
- Develop conversion subsidy programmes for residential and commercial users

Grid Modernisation

- Upgrade transmission and distribution networks for fluctuating renewable inputs
- Invest in smart grids, energy storage, and digital monitoring systems
- Implement advanced metering infrastructure and automation

Urban Transformation and Connectivity

- Upgrade urban infrastructure and quality of life in all major towns and district headquarters.
- Modernise supply chains and logistics for horticulture and livestock-based products, improving farmer incomes and agro-processing competitiveness.
- Achieve Level-Crossing-Free State status by 2030–2035 to enhance safety and mobility.

Long-Term Pathway (2047)

- Expand microgrid deployment in remote and disaster-prone regions

Corporate Renewable Procurement

- Mandate corporate renewable energy procurement through enforceable obligations
- Incentivise green power purchase agreements with favourable tax treatment
- Create transparent tracking and verification systems for compliance

Carbon-Neutral Energy Ecosystem

- Establish net-zero industrial clusters with waste heat recovery systems
- Develop circular economy principles for energy production and consumption
- Create a comprehensive carbon capture and utilisation infrastructure

Urban Transformation and Connectivity

- Develop future-ready, climate-resilient cities under the Panchgram framework with integrated smart mobility, waste, and water systems.
- Establish regional logistics and agri-processing hubs linked to multi-modal transport networks.
- Institutionalise smart urban governance for real-time service delivery and citizen participation.

ISSUE 4: ADOPTING SUSTAINABLE, GREEN TECHNOLOGY STANDARDS, SOPs FOR INFRASTRUCTURE AND BUILDING

Haryana is actively implementing sustainable and green technology standards along with SOPs for infrastructure and building development. This strategic initiative aims to reduce environmental impacts, enhance resource efficiency, and create healthier living and working environments across the state. By establishing comprehensive frameworks for green construction, energy-efficient systems,

and sustainable materials, Haryana is working to transform its entire built environment—including buildings, infrastructure, and public spaces—to meet evolving environmental challenges while supporting economic growth. The integration of these standards into regulatory frameworks and development practices positions the state as a leader in sustainable infrastructure development with long-term benefits for communities, businesses, and ecosystems.

Current Status

- ✔ **Regulatory Framework:** Energy Conservation Building Code (ECBC) notified and incorporated into the unified building bylaws of Haryana
- ✔ **Green Building Adoption:** 334 certified green buildings in the state (certified by GBCI, IGBC & GRIHA), with 52% being ECBC compliant⁴⁶
- ✔ **Energy Conservation Impact:** 9 Million Units (MU) of energy saved and 7,000 tonnes of CO₂e emissions avoided through energy efficiency programmes in commercial buildings⁴⁷
- ✔ **Annual Energy Savings:** Documented savings of 6,543,330 kWh in FY 2020-2021 and 7,174,950 kWh in FY 2021-2022⁴⁸
- ✔ **Emissions Reduction:** 5,561 tonnes CO₂e avoided in FY 2020-2021 and 6,098 tonnes CO₂e in FY 2021-2022 through energy-efficiency street lighting⁴⁹
- ✔ **Notable Achievements:** Haryana's Model Economic Township awarded the Confederation of Indian Industry's (CII) Indian Green Building Council 'Green Cities Platinum' certification⁵⁰
- ✔ **Waste Management:** Proportion of waste recycled vs. waste generated: 2.20 (2020-21)⁵¹
- ✔ **Municipal Services:** 87% of households have solid waste regularly collected (2021-22)⁵²

Factors Influencing the Issue

The adoption of sustainable, green technology standards and SOPs for infrastructure and building in Haryana is influenced by several interconnected factors. Government policies and international agreements provide the regulatory framework and incentives for sustainable practices, while economic considerations, including cost-benefit analyses and market demand for eco-friendly solutions, drive investment decisions. Public awareness and community engagement shape social acceptance and demand for green infrastructure, with technological advancements enabling innovative solutions in construction materials, energy systems, and waste management. Regulatory compliance with environmental standards and building codes establishes minimum requirements for sustainability performance, while environmental concerns, including climate change impacts and resource scarcity, create urgency for adopting resilient, low-impact development approaches. Together, these factors create a complex ecosystem that determines the pace and scale of sustainable infrastructure development across the state.

Impacts of the Issue

Direct Impact

- **Enhanced Reputation:** Organisations and projects implementing sustainable standards gain recognition as environmentally responsible entities, improving brand value and stakeholder relations.
- **Regulatory Compliance:** Adoption of green standards ensures adherence to environmental regulations, minimising legal risks and avoiding potential penalties for non-compliance.
- **Resource Efficiency:** Green technologies directly reduce energy, water, and material consumption, generating operational cost savings throughout infrastructure lifecycles.
- **Improved Occupant Health:** Green buildings with enhanced air quality, natural lighting, and reduced toxins directly benefit the health, well-being, and productivity of occupants.

Indirect Impact

- **Green Job Creation:** The sustainable infrastructure sector generates specialised employment opportunities in design, construction, certification, and maintenance of green buildings and systems.
- **Knowledge Transfer:** Implementation of sustainable practices facilitates skill development and expertise sharing across industries, fostering innovation and capacity building.
- **Natural Resource Conservation:** Sustainable building practices reduce extraction demands for raw materials, minimise waste generation, and protect ecosystems from development impacts.
- **Community Resilience:** Sustainable infrastructure strengthens local resilience to climate impacts, enhances property values, and creates more livable communities with long-term social benefits.

Global Learnings

Global Best Practice

Singapore's Green Mark 2021: Singapore's Building and Construction Authority has implemented the Green Mark 2021 (GM: 2021) certification scheme, a comprehensive framework tailored for tropical climates to promote sustainable building practices. This scheme emphasises key sustainability outcomes, including energy performance, embodied carbon reduction, smart technology integration, climate resilience, and occupant health.⁵³

Disruptive Technologies -Harnessing Molten Salts for Thermal Energy Storage

Molten salts represent a versatile phase change material widely employed in thermal energy storage systems. Solid at room temperature and atmospheric pressure, they transition into a liquid state when absorbing thermal energy. Typically composed of 60% sodium nitrate and 40% potassium nitrate, these salts melt at around 220°C. Primarily integrated with concentrating solar power (CSP) plants, molten salts serve as reservoirs for excess heat that is not immediately utilised for electricity generation. Stored within insulated tanks, this thermal energy becomes a valuable resource post-sunset. By converting stored thermal energy into steam, CSP plants can

Case Study of Kalundborg Industrial Symbiosis, Denmark

The Kalundborg industrial symbiosis case in Denmark is a pioneering example of industrial ecology, where a network of private and public enterprises collaborates to optimise resource use by exchanging energy, water, and material by-products. Originating in the 1960s with a project to share water resources, the network organically expanded to include major partners such as the Asnæs Power Station, Novo Nordisk, Novozymes, Statoil, and several others. In this system, surplus heat, steam, wastewater, and other by-products from one facility become valuable inputs for another. For example, excess heat from the power plant is used to heat local homes and a fish farm, while gypsum from sulfur scrubbers is supplied to a wallboard manufacturer. This circular approach has transformed what was once industrial waste into revenue streams, delivering significant environmental and economic benefits, including annual savings of €24 million, reductions of 6,35,000 tonnes of CO₂, 3.6 million cubic metres of water, and 100 GWh of energy.

continue generating electricity even in the absence of direct sunlight. Moreover, the capacity for thermal energy storage using molten salts enables CSP plants to smooth out electricity production, reducing the variability inherent in solar photovoltaic (PV) technologies.⁵⁴

Possible Pathways

Short-Term Pathway (2030)

Governance Structure Establishment

- Create a cross-functional sustainability committee with representatives from key departments
- Develop a green technology roadmap with clear SOPs and compliance checklists
- Set measurable targets for implementation across sectors

Financial Mechanism Development

- Identify grants and subsidies from national and international sources

- Allocate initial budget for pilot initiatives in solar installations and retrofits
- Create financial incentives for early adopters of green standards

Capacity Building Implementation

- Conduct mandatory training sessions on green construction, smart city technologies, and sustainable urban planning for staff, contractors and project managers.

Short-Term Pathway (2030)

- Implement certification programmes to ensure compliance with green standards
- Develop professional development pathways for sustainability specialists

Energy Efficiency Programmes

- Perform comprehensive energy audits of existing infrastructure
- Recommend retrofits for lighting, HVAC, and energy management systems
- Establish annual energy performance benchmarks for measuring improvements

Green Building Standards Implementation

- Mandate renewable energy integration and green building certifications
- Implement circular economy principles for materials and water systems
- Integrate climate-resilient design requirements into building codes

Digital Governance Interventions

- Build the Haryana State Data Grid (HSDG) as the Digital Backbone: Establish a unified state-level data grid integrating departmental databases to enable cross-sector analytics, improve service delivery, and support evidence-based policymaking.

- Adopt Data-Driven and AI-Enabled Governance: Deploy AI-based decision dashboards across departments for real-time monitoring, predictive analytics (e.g., drought/stubble alerts, disease mapping, revenue forecasting), and data-driven policymaking.
- Develop an AI-Integrated State Digital Twin: Create a dynamic digital twin of Haryana to support simulation-based urban planning, infrastructure management, and environmental monitoring—drawing inspiration from Singapore’s Virtual Singapore. This will allow real-time simulation for evidence-backed decisions.
- Institutionalise Innovation & Governance Foresight: Set up Data Innovation Labs (in collaboration with universities, startups, and global partners) to develop AI prototypes and predictive tools. Introduce a Foresight-Driven Governance Index to annually assess departments’ innovation readiness, adaptability, and progress.

Energy Efficiency and Governance Innovation

- Institutionalise annual energy audits across all Government departments, PSUs, educational and healthcare institutions.
- Recognise and reward top-performing entities to encourage energy efficiency and responsible governance.

Long-Term Pathway (2047)

Vertical and Aerial Infrastructure Policy

- Formulate comprehensive regulations for high-rise buildings and aerial infrastructure
- Establish safety, sustainability, and zoning regulations for emerging construction types
- Create permitting frameworks ensuring climate resilience and efficient land use

- Enhanced MSME Policy & revamped Cluster Plug & Play Scheme focusing on promoting green buildings & facilities, energy efficiency & reducing carbon footprint

Long-Term Pathway (2047)

Life Cycle Cost Analysis Integration

- Mandate total cost-of-ownership assessments for all public infrastructure projects
- Require life cycle analysis for procurement decisions to demonstrate long-term savings
- Develop standardised methodologies for calculating lifetime environmental and carbon impacts, aligned with international ESG reporting norms

Sustainable Workforce Development

- Establish specialised training programmes and certification courses on green construction, smart city technologies, and sustainable urban planning.
- Create university partnerships for research and education in sustainable construction
- Develop career pathways and mentorship opportunities in the green infrastructure fields

Smart Infrastructure Monitoring

- Deploy IoT sensors and AI-driven analytics for real-time infrastructure monitoring

- Implement predictive maintenance systems and automated fault detection
- Create smart dashboards tracking energy consumption and structural health

Comprehensive Retrofitting Programme

- Launch nationwide programmes to upgrade ageing infrastructure
- Implement high-efficiency insulation and renewable energy systems
- Create performance-based incentives for sustainability retrofits in existing buildings

Energy Efficiency and Governance Innovation

- Embed energy efficiency and carbon accountability systems within governance architecture.
- Create a statewide Green Governance Index benchmarking institutions on sustainability and innovation.

ISSUE 5: BRIDGING MULTI-DIMENSIONAL DIGITAL DIVIDE AND INTEGRATING NEW TECHNOLOGIES FOR SEAMLESS PUBLIC SERVICES

Haryana is addressing the complex challenge of digital inequality while simultaneously leveraging emerging technologies to transform public service delivery. This dual approach aims to ensure that all citizens—regardless of location, socioeconomic status, or technical proficiency—can benefit from the state's digital transformation. By expanding digital infrastructure, enhancing access to devices and connectivity, building digital literacy, and implementing innovative technology solutions for government services, Haryana is working to create an inclusive digital ecosystem that improves quality of life, increases economic opportunities, and strengthens civic participation across all segments of society.

Current Status

- ✔ **Internet Penetration:** 117.13 internet subscriptions per 100 population (December 2024)⁵⁵
- ✔ **Digital Divide:** 10.06 million rural internet subscribers compared to 20.20 million urban subscribers, reflecting geographical disparities⁵⁶
- ✔ **Connectivity Type:** Predominantly broadband connections with 10.06 million rural and 20.20 million urban broadband subscribers, while narrowband connections number 0.20 million in rural and 1.66 million in urban areas⁵⁷
- ✔ **Mobile Connectivity:** 12.19 million wireless subscribers in rural areas versus 23.02 million in urban areas⁵⁸

- ✔ **Device Access:** 92.4% of enrolled school children have smartphone availability at home (2024)⁵⁹
- ✔ **Rural Connectivity:** 6,204 Gram Panchayats declared service-ready under the Bharat Net project⁶⁰
- ✔ **Digital Infrastructure:** 80 applications/websites of various departments hosted on the State Data Centre, with seven Mission Mode Projects operational⁶¹
- ✔ **Cybersecurity:** New security appliance deployed to counter cyber threats⁶²
- ✔ **Digital Governance:** Approximately 10 lakh gate passes issued for transparent food procurement and payment files of more than INR 40,000 crore processed through the e-Kharid portal⁶³
- ✔ **Citizen Services:** 557 State Government-to-Citizen (G2C) services/schemes from 45 departments provided through Antyodaya Saral⁶⁴
- ✔ **Digital Transactions:** Haryana Cashless Consolidated portal monitoring over 483.32 crore digital transactions⁶⁵
- ✔ **Innovation Leadership:** First state to onboard services on UMANG Platform (2018-19)⁶⁶
- ✔ **Citizen Feedback:** 392 services from 33 departments integrated with Haryana-Real time Automated Feedback Dashboard (H-RAFD)⁶⁷

Factors Influencing the Issue

The Efforts to bridge the digital divide and integrate new technologies for public services in Haryana are shaped by multiple interconnected factors. Government policies and priorities determine resource allocation and strategic direction for digital infrastructure and inclusion initiatives. Economic considerations, including budget constraints and development goals, influence the scale and scope of technology adoption across sectors. Societal factors such as educational disparities, language barriers, and demographic characteristics affect digital literacy and technology adoption rates among different population segments. Technological advancement enables innovative solutions for service delivery while creating challenges for keeping pace with rapidly evolving digital landscapes. Regulatory frameworks for data privacy, cybersecurity, and digital rights establish the boundaries for technology implementation and usage. Geographic considerations, including rural-urban disparities and physical infrastructure limitations, impact the feasibility and cost of expanding digital access to remote areas. Together, these factors create a complex environment that require comprehensive, multi-dimensional strategies to achieve digital inclusion and seamless public service delivery.

Impacts of the Issue

Direct Impact

- **Improved Service Accessibility:** Digital integration directly enhances citizen access to essential government services, reducing time, cost, and effort required for service utilisation.
- **Enhanced Digital Literacy:** Targeted initiatives directly increase citizens' ability to navigate digital platforms, access information, and engage with online services effectively.

Indirect Impact

- **Economic Development:** Digital inclusion stimulates entrepreneurship opportunities, particularly in e-commerce and digital services, creating new economic pathways for previously disconnected communities.
- **Educational Advancement:** Improved digital access enables distance learning, research capabilities, and skills development, enhancing human capital across regions.

Direct Impact

- **Reduced Administrative Burden:** Technology integration directly streamlines government processes, reducing paperwork, processing times, and administrative costs.
- **Data-Driven Decision Making:** Integration of digital technologies enables the collection and analysis of comprehensive data, supporting evidence-based policy formulation and resource allocation.

Indirect Impact

- **Enhanced Transparency:** Digital systems facilitate real-time data collection, monitoring, and reporting, strengthening accountability in governance and public expenditure.
- **Social Cohesion:** Expanded digital connectivity fosters community networks, information sharing, and collective action, strengthening social bonds across geographic and demographic boundaries.

Global Learnings

Global Best Practice

High-Speed Broadband as Foundational Infrastructure for Inclusive Digital Growth:

Finland has classified internet access as a legal right since 2010, embedding high-speed broadband within its national infrastructure development strategy. Through the Broadband 2025 programme, the government co-invests with municipalities and telecom companies to ensure gigabit connectivity in rural and remote regions, enabling equal access to digital public services such as healthcare, education, and administrative platforms.⁶⁸

Disruptive Technologies - Breaking Barriers: The Rise of Low-Earth Orbit Satellite Systems

Traditional broadband infrastructure struggles to extend its reach to remote corners of the globe, leaving millions without connectivity. However, the emergence of Low-Earth Orbit (LEO) satellite systems promises to revolutionise global connectivity, ushering in a new era of technological advancement. Operating at altitudes between 500 and 2,000 kilometres, LEO satellites offer a game-changing advantage by significantly reducing signal latency. This breakthrough enables high-speed internet access in rural and underserved areas, transforming distant dreams into tangible realities. Beyond mere connectivity, this innovation empowers communities with access to essential services like education, healthcare, and economic opportunities.⁶⁹

Possible Pathways

Short-Term Pathway (2030)

Digital Inclusion Task Force

- Form a dedicated committee with government agencies, tech experts, and community representatives
- Assess connectivity gaps, affordability issues, and digital literacy barriers
- Develop a comprehensive digital inclusion policy with implementation roadmaps

Digital Literacy Programmes

- Provide structured training for government employees and community leaders
- Establish local digital support centres with trained personnel
- Develop multilingual training materials for diverse user groups

Digital Needs Assessment

- Conduct a nationwide assessment mapping internet access gaps and device availability
- Utilise surveys, focus groups, and data analytics for targeted interventions
- Create baseline measurements for monitoring progress over time

Strategic Outreach Campaign

- Design multi-platform awareness initiatives through social media and local events
- Inform marginalised communities about available programmes and benefits
- Ensure accessibility in multiple languages and formats

Connectivity Enhancement

- Deploy mobile internet hubs and satellite-based connectivity in rural areas
- Establish solar-powered digital access points in underserved regions
- Create community-managed Wi-Fi networks in remote locations

Long-Term Pathway (2047)

Wireless Power Transfer Technology

- Support R&D initiatives through funding pilot projects and university-industry collaborations
- Establish testing facilities to refine efficiency and safety parameters
- Create regulatory frameworks for large-scale implementation

Public-Private Infrastructure Partnership

- Develop high-quality infrastructure through incentivised private investment
- Create transparent policies ensuring efficient risk-sharing and regulatory support
- Establish long-term sustainability frameworks for digital infrastructure projects

Digital Workforce Development

- Invest in specialised training programmes for AI, blockchain, and cybersecurity
- Create industry-academia partnerships for curriculum development
- Establish continuing education frameworks for rapidly evolving technologies

Comprehensive Digitalisation

- Mandate the adoption of AI-driven automation and blockchain technologies for seamless public services, securing supply chains, reducing fraud in transactions, and enhancing transparency in governance.
- Implement interoperable platforms, ensuring secure data exchange
- Develop real-time service delivery mechanisms across sectors

Universal Accessibility Standards

- Establish inclusive design requirements for all digital services
- Enforce universal accessibility guidelines with compliance monitoring
- Develop comprehensive assistive technology integration frameworks

Short-Term Pathway (2030)

Custom Inclusion Solutions

- Implement multilingual digital interfaces for government services
- Develop assistive technologies for persons with disabilities
- Create simplified service portals for users with limited digital literacy

Long-Term Pathway (2047)

Quantum Technology Integration

- Deploy quantum communications infrastructure for ultra-secure government networks
- Implement quantum computing solutions for complex public service challenges
- Establish quantum encryption standards for critical infrastructure protection

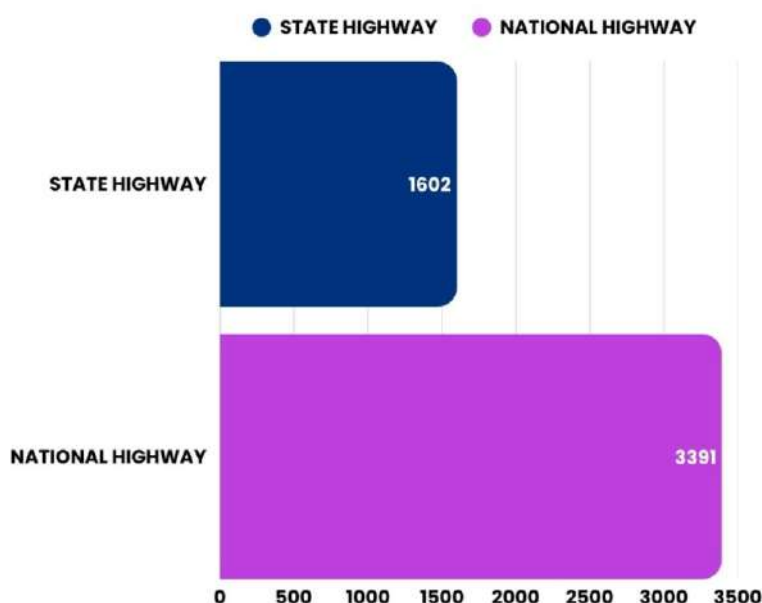
ISSUE 6: BRIDGING DISPARITIES THROUGH INCLUSIVE AND EQUITABLE INFRASTRUCTURE

Haryana is implementing strategic initiatives to address persistent inequalities in infrastructure access across rural-urban divides, between districts, and across gender lines. This multifaceted approach recognises that equitable development requires targeted investment in physical infrastructure—including transportation networks, public facilities, and essential services—that meets the diverse needs of all populations. By enhancing accessibility, improving connectivity, and ensuring gender-responsive design, Haryana aims to reduce geographical and social disparities, improve quality of life for underserved communities, and create more inclusive pathways for economic participation and social integration across the state, thereby reducing migration pressures.

Current Status

- ✓ **Rural Connectivity:** 100% of habitations have access to all-weather roads under the PMGSY⁷⁰
- ✓ **Road Surface Quality:** 79.9% of rural roads and 72.7% of urban roads are surfaced (2019)⁷¹
- ✓ **Highway Network:** Total length of National Highways spanning 3,391 km (representing 2.3% of India's national highways) as of March 2024⁷²
- ✓ **State Road Infrastructure:** State Highways extending 1,638 km⁷³
- ✓ **Infrastructure Quality:** Significant improvements in road quality and connectivity, though variations exist between developed and emerging districts
- ✓ **Gender-Responsive Design:** Increasing focus on infrastructure that addresses women's safety, accessibility, and economic participation needs
- ✓ **Regional Balance:** Ongoing efforts to address infrastructure disparities between the NCR and other parts of the state

Length of Highways (In Km)



Graph 36: Length of Highways
(Source: Ministry of Road Transport and Highways)

Factors Influencing the Issue

Addressing rural-urban, district, and gender disparities in infrastructure access is influenced by a complex interplay of factors. Government policies and priorities determine resource allocation patterns, with historical urban bias often creating imbalanced development. Budget constraints and economic considerations impact the scale and reach of infrastructure projects, affecting implementation timelines and quality standards. Community engagement levels influence the responsiveness of infrastructure design to local needs, particularly for marginalised groups. Technological advancements provide opportunities for innovative infrastructure solutions that can accelerate service delivery in underserved areas. Regulatory frameworks, including land acquisition policies and environmental clearances, affect project implementation speed and cost. Geographic challenges such as terrain diversity and population density variations create differing infrastructure requirements across regions. Social dynamics, including gender norms and power structures, influence how infrastructure benefits are distributed among different population groups. Together, these factors create a complex ecosystem that requires comprehensive strategies to achieve equitable infrastructure development.

Impacts of the Issue

Direct Impact

Enhanced Service Access

- Equitable infrastructure directly improves the availability of essential services, including healthcare, education, and administrative facilities in underserved areas

Social Inclusion:

- Infrastructure designed with gender and accessibility considerations directly enables participation of women, the elderly, and persons with disabilities in economic and social activities

Reduced Travel Burden:

- Enhanced transportation networks directly decrease travel time and costs for rural populations accessing urban services and employment opportunities

Safety Enhancement:

- Gender-responsive infrastructure directly improves safety and security for women and vulnerable groups through features like proper lighting, secure public spaces, and safe transport options

Reduced Rural-Urban Migration:

- Targeted rural infrastructure development directly provides better local opportunities and services, lessening the need for rural populations to migrate to urban centres

Indirect Impact

Economic Opportunity Creation:

- Improved connectivity generates employment opportunities, enhances market access for local products, and stimulates entrepreneurship in previously isolated communities

Health and Educational Outcomes:

- Better infrastructure facilitates access to healthcare facilities and educational institutions, improving community well-being and human capital development

Community Resilience:

- Equitable infrastructure strengthens local governance structures, enhances disaster preparedness, and promotes social cohesion through improved connectivity and service delivery

Demographic Stability:

- Improved rural infrastructure reduces urban migration pressures, maintaining balanced population distribution and preventing excessive urban concentration

Global Learnings

Global Best Practice

Austria – Vienna's Gender Mainstreaming in Urban Planning: Vienna has emerged as a pioneer in integrating gender perspectives into urban planning, ensuring that infrastructure and public spaces cater to the diverse needs of all citizens. Under the leadership of urban planner

Disruptive Technologies - Empowering Communities: The Impact of Gender-Responsive Infrastructure

Infrastructure development, when thoughtfully executed, holds the power to foster women's participation and facilitate access to essential services by considering the unique needs, location, and purpose of buildings. Gender-responsive infrastructure not only addresses practical needs

Eva Kail, the city implemented projects like the Frauen-Werk-Stadt housing complex, designed with features such as on-site childcare, wide stairwells, and proximity to public transport to accommodate women's daily routines.⁷⁴

but also plays a pivotal role in enhancing safety and security. By minimising risks and accidents, it contributes to reducing instances of harassment, violence, and crime, thereby creating a safer environment for all individuals. Moreover, embracing universal design principles ensures that infrastructure is accessible to everyone, including individuals with disabilities, older persons, and caregivers with children. By promoting inclusivity and accessibility, gender-responsive infrastructure not only enhances the quality of life for marginalised groups but also fosters a more equitable and inclusive society.⁷⁵

Possible Pathways

Short-Term Pathway (2030)

Policy Reform

- Conduct a systematic review of existing infrastructure policies
- Develop a comprehensive framework addressing accessibility gaps
- Establish equity-based infrastructure prioritisation criteria

Targeted Funding

- Allocate dedicated resources for underserved regions
- Prioritise community-driven infrastructure solutions
- Develop innovative financing models for inclusive projects
- Allocate dedicated resources for rural infrastructure projects, prioritising enhancements in digital connectivity, essential services (healthcare, education), and local economic development opportunities to mitigate migration.

Data-Driven Planning

- Conduct comprehensive accessibility assessments nationwide

Long-Term Pathway (2047)

Legislative Framework

- Enact legislation requiring accessibility standards in all infrastructure projects
- Establish mandatory compliance through regulatory frameworks and audits
- Implement penalty systems for non-compliance with inclusion standards

Sustainable Financing System

- Create dedicated infrastructure development funds for long-term equity projects
- Design blended financing models leveraging public and private capital
- Implement long-term maintenance funding mechanisms for rural infrastructure

Advanced Planning Tools

- Deploy predictive modelling systems anticipating future infrastructure needs
- Implement real-time infrastructure monitoring for efficient resource allocation
- Develop AI-based decision support systems for infrastructure planning

Short-Term Pathway (2030)

- Utilise GIS mapping and analytics for identifying priority areas
- Establish quantitative equity indicators for measuring progress

Community Infrastructure

- Implement low-cost, locally-managed improvement projects
- Engage citizen groups in design and maintenance processes
- Prioritise high-impact interventions addressing basic needs

Sustainability Integration

- Incorporate green infrastructure in community development projects
- Implement renewable energy solutions for public facilities
- Develop climate-adaptive designs for vulnerable regions

Long-Term Pathway (2047)

Rural-Urban Integration

- Develop integrated infrastructure networks seamlessly connecting rural and urban areas, specifically addressing the rural-urban divide by improving access to digital infrastructure, job opportunities, and essential services in rural areas to reduce migration pressures
- Implement water, energy, and digital infrastructure reaching all communities
- Create circular mobility systems linking production and consumption centres

Climate-Resilient Systems

- Implement comprehensive climate adaptation in all infrastructure
- Deploy flood-resistant construction and natural buffer systems
- Establish self-sustaining infrastructure models with renewable energy integration

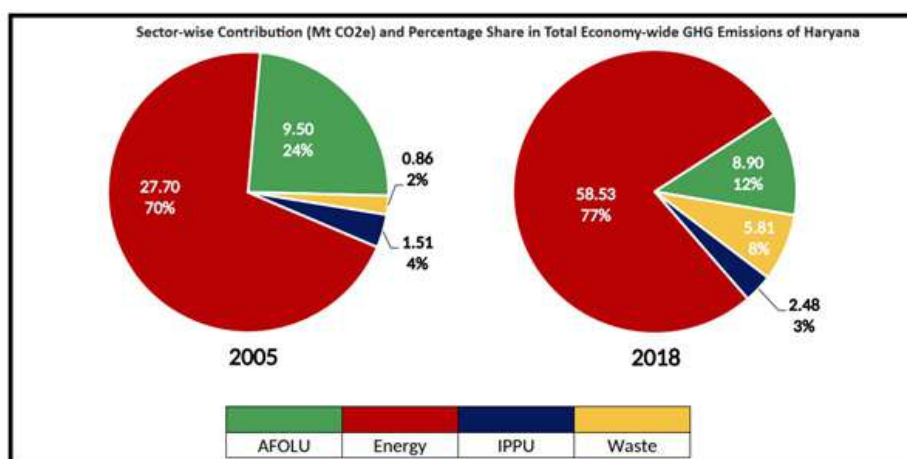
ISSUE 7: ADAPTING INDUSTRIES TO RAPID CHANGES IN GLOBAL SUSTAINABILITY STANDARDS

Haryana's industrial sector faces the dual challenge of adapting to increasingly stringent global sustainability standards while simultaneously integrating rapidly evolving technologies. This transformation is essential for maintaining competitiveness in a global market where ESG criteria are becoming central to investment decisions and business operations. The state must navigate the transition toward carbon neutrality, resource efficiency, and responsible production practices while strategically embracing emerging technologies like AI, additive manufacturing, robotics, and blockchain to enhance productivity, innovation, and sustainability. This synchronised adaptation is critical for ensuring Haryana's industries remain viable, competitive, and aligned with global market expectations while contributing to broader environmental and social goals.

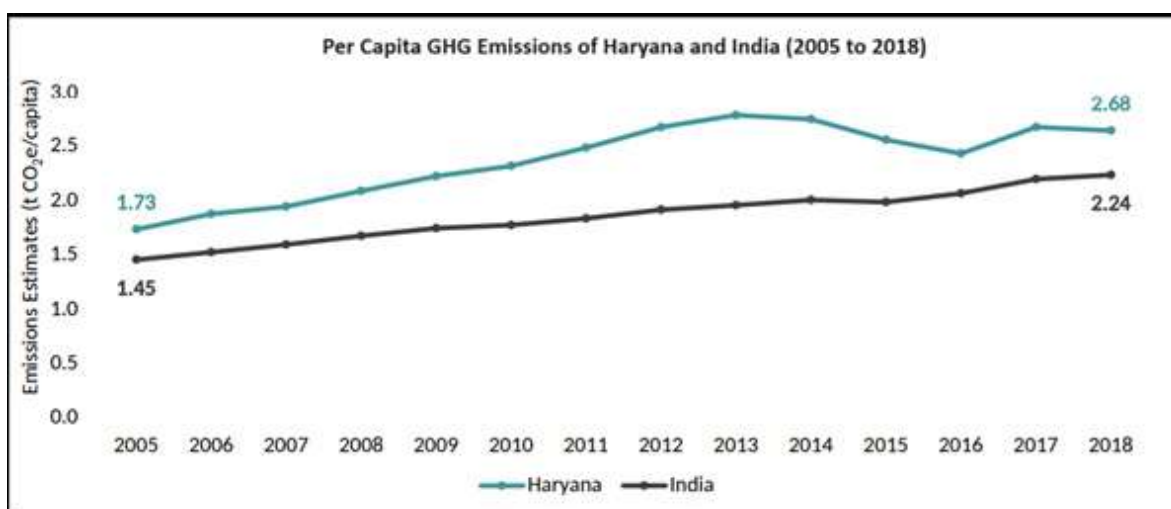
Current Status⁷⁶

- ✔ **Emissions Trajectory:** Haryana's greenhouse gas emissions increased from 39.57 Mt CO₂e in 2005 to 75.72 Mt CO₂e in 2018, growing at a CAGR of 5.12%
- ✔ **Sectoral Distribution:** The Energy sector's share in economy-wide emissions increased from ~70% in 2005 to ~77% in 2018
- ✔ **Industrial Emissions:** The share of emissions from the Industrial Processes and Product Use (IPPU) sector quadrupled from ~2% in 2005 to ~8% in 2018

- ✔ **Agricultural Emissions:** Share of Agriculture, Forestry and Other Land-Use (AFOLU) sector emissions halved from ~24% in 2005 to ~12% in 2018
- ✔ **Waste Management:** Share of waste sector emissions marginally decreased from ~4% in 2005 to ~3% in 2018
- ✔ **Per Capita Impact:** Per capita emissions in Haryana increased from 1.73 tonnes CO₂e/capita in 2005 to 2.68 tonnes CO₂e/capita in 2018 (CAGR 3.42%)
- ✔ **Comparative Standing:** Haryana's per capita emissions remain higher than India's national average throughout the reference period
- ✔ **Technology Adoption:** Varied levels of emerging technology integration across industrial sectors, with larger enterprises leading in adoption rates
- ✔ **ESG Compliance:** Growing awareness and implementation of ESG frameworks, though comprehensive adoption remains a work in progress



Graph 37: Sector-wise Contribution (Mt CO₂e) and Percentage Share in Total Economy-wide GHG Emissions of Haryana
(Source: Trend Analysis of GHG Emissions of Haryana: Analysis of Greenhouse Gas Emissions from 2005 to 2018)



Graph 38: GHG Emissions Estimates of Haryana (2005 to 2018)
(Source: Trend Analysis of GHG Emissions of Haryana: Analysis of Greenhouse Gas Emissions from 2005 to 2018)

Factors Influencing the Issue

The adaptation of Haryana's industries to global sustainability standards and emerging technologies is influenced by several interconnected factors. Regulatory frameworks at international, national, and state levels establish compliance requirements for emissions, resource usage, and corporate governance practices. Market forces, including consumer preferences, investor requirements, and supply chain pressures, drive adoption of sustainable practices and technological innovation as competitive necessities. Financial considerations encompassing implementation costs, return on investment timelines, and access to green finance determine the feasibility and pace of transformation. Technological accessibility, including infrastructure readiness, skilled workforce availability, and technology transfer mechanisms, affects industry capacity to integrate advanced solutions. Industry structure characteristics such as sector composition, firm size distribution, and value chain positions influence adaptation capabilities and priorities. Knowledge and awareness levels among business leaders regarding sustainability practices and technological opportunities shape strategic decision-making. Together, these factors create a dynamic environment requiring coordinated strategies to enable Haryana's industrial sector to effectively navigate the dual transformation toward sustainability and technological advancement.

Impacts of the Issue

Direct Impact

- **Competitive Enhancement:** Adaptation to sustainability standards and emerging technologies directly improves operational efficiency, product quality, and market positioning, strengthening business viability.
- **Regulatory Compliance:** Proactive adaptation ensures adherence to evolving regulatory requirements, minimising legal risks, penalties, and operational disruptions associated with non-compliance.
- **Resource Efficiency:** Implementation of sustainable practices and advanced technologies directly reduces energy, water, and material consumption, generating operational cost savings.
- **Emissions Reduction:** Adoption of clean technologies and processes directly decreases greenhouse gas emissions and pollutants, contributing to environmental improvement and climate change mitigation.

Indirect Impact

- **Innovation Ecosystem Development:** Industrial transformation stimulates supporting networks of research institutions, technology providers, and specialised service firms, creating a broader innovation ecosystem.
- **Supply Chain Optimisation:** Sustainability and technology integration enhance resilience against disruptions, improve traceability, and reduce vulnerability to resource scarcity and climate impacts.
- **Workforce Evolution:** Industrial transformation creates new employment categories requiring advanced skills while phasing out certain traditional roles, reshaping labour market dynamics.
- **Knowledge Transfer:** Best practices in sustainability and technology application spread across industry sectors and to smaller enterprises, elevating overall industrial performance standards.

Global Learnings

Global Best Practice

Fujitsu's AI and Blockchain-Based ESG

Management: Japan's Fujitsu has developed an advanced ESG management platform that integrates AI and blockchain to monitor, analyse, and report environmental and social performance metrics across supply chains. By leveraging AI, the system identifies sustainability risks and opportunities in real time, while blockchain ensures data transparency and traceability, particularly in tracking carbon emissions and responsible sourcing.⁷⁷

Disruptive Technologies - Revolutionising Carbon Credit Systems: Blockchain Integration and Tokenisation

In the realm of carbon credit systems, two significant advancements are reshaping the landscape. Firstly, the integration of blockchain technology brings about a paradigm shift, offering transparent and secure transactions that mitigate fraud risks and bolster overall market integrity. By decentralising record-keeping, blockchain ensures tamper-proof data, fostering trust among stakeholders. Secondly, the tokenisation of carbon credits represents a revolutionary leap forward, transforming them into digital tokens on blockchain platforms. This enables fractional ownership and facilitates trading of smaller units, making carbon credits more accessible to a broader range of market participants. Moreover, tokenisation streamlines transactions, enhancing efficiency and expediting the exchange process. Together, these innovations herald a new era for carbon credit systems, paving the way for greater transparency, accessibility, and efficiency in addressing environmental challenges.⁷⁸

Possible Pathways

Short-Term Pathway (2030)

Policy Framework Development

- Establish clear sustainability policies aligned with global ESG benchmarks
- Ensure industry-wide compliance through mandatory reporting mechanisms
- Provide incentives for early adopters of sustainable practices
- Haryana Industrial Equipment Re-use & Scrappage Scheme to facilitate a circular economy model by incentivising the reuse of industrial equipment & structured scrappage processes

Long-Term Pathway (2047)

Specialised Governance Structure

- Establish the Department of Emergent Technologies with specialised research hubs
- Develop comprehensive regulatory frameworks for emerging technology adoption
- Create sector-specific sustainability standards and verification systems

Sustainable Finance Ecosystem

- Create comprehensive green bond frameworks and sustainability-linked instruments

Short-Term Pathway (2030)

Capacity Building Initiatives

- Dedicate funding for targeted training programmes on sustainability practices
- Partner with academic institutions for knowledge transfer initiatives
- Develop sector-specific educational modules on emerging technologies
- Implement specialised policies to attract and incentivise GCCs, focusing on high-value functions. This could include tax benefits, streamlined regulations, and talent development programmes.

Skills Enhancement Programmes

- Conduct comprehensive workforce skills assessments
- Implement structured upskilling programmes focused on sustainability and digital technologies
- Establish certification standards for green skills and advanced technology competencies

Monitoring System Implementation

- Deploy data collection and analytics systems for sustainability indicators
- Establish real-time reporting tools for compliance tracking
- Develop performance benchmarking mechanisms for industry comparison

Infrastructure Adaptation

- Perform comprehensive audits of existing industrial facilities
- Implement energy efficiency retrofits and waste reduction systems
- Upgrade production facilities for emerging technology compatibility
- **Haryana Green Cluster Scheme:** Identification of energy-intensive & polluting industrial clusters and handholding them for adoption of green technologies through ready-available techno-financial feasibility assessment reports

Long-Term Pathway (2047)

- Establish viability gap funding mechanisms for transformative technologies
- Develop carbon market infrastructure with trading platforms and verification systems

Supply Chain Transformation

- Implement blockchain-based traceability systems for product authentication reducing fraud in transactions and enhancing transparency.
- Deploy AI-driven logistics optimisation frameworks
- Establish circular economy standards for resource recovery and reuse

Smart Infrastructure Integration

- Deploy AI-integrated, IoT-enabled manufacturing systems with predictive maintenance and emissions optimisation to reduce downtime and meet global low-carbon compliance norms
- Implement digital twin technology for infrastructure optimisation
- Develop autonomous energy management systems with AI optimisation

Circular Economy Implementation

- Establish closed-loop production systems with zero-waste targets
- Develop industrial symbiosis networks for resource exchange
- Create comprehensive materials passport systems for full lifecycle tracking

BIG ACTIONS

1. AI-Infused Industrial Corridor

Haryana will develop ultra-sustainable, AI-powered industrial zones aligned with UNIDO's **Eco-Industrial Park framework** and principles of Industrial Symbiosis. The proposed **10 Integrated Manufacturing Townships (IMTs)** will serve as green manufacturing hubs with net-zero carbon goals, resource-efficient infrastructure, and intelligent supply chains—positioning Haryana as a global leader in climate-smart industrialisation.

2. She Rise 2.0

A transformative initiative mandating at least 50% women's workforce participation in all new industrial projects, supported by state-led skill accelerators, subsidised childcare, and inclusive workplace models—amplifying women's economic agency.

3. Global Green Axis

Haryana will design an ultra-sustainable industrial zone adhering to next-generation ecological standards, drawing international companies to set up zero-emission manufacturing facilities and making the state an export powerhouse for green products.

WORKING GROUP - 3

Departments

- | | | | |
|--|---|---|---|
| 1. Department of Industries and Commerce | 2. Directorate of Micro, Small, & Medium Enterprises | 3. Department of Transport | 4. Department of Civil Aviation |
| 5. Citizen Resources Information Department | 6. Energy Department | 7. Directorate of Science & Technology | 8. Public Works Department (B & R) |
| 9. Irrigation & Water Resource Department | | | |

Timeline

14/07/2023



Meeting with the Member Secretary of the Working Group

19/01/2024



First Meeting of the Working Group

09/02/2024



Workshop of the Working Group (Hotel Mount View)



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REGIONAL DEVELOPMENT AND LOCAL SELF-GOVERNMENT



WHERE ARE WE?

Strengths

- Increasing per capita income; higher share in the national GDP
- Strong clustering near Delhi NCR; rising service sector
- Robust agricultural base
- Improving governance through PPP initiatives
- Financial and administrative empowerment of PRIs
- Effective women empowerment policies

Areas of Improvement

- Uneven regional development (Gurgaon vis-à-vis Nuh)
- Urban slum challenges - Poor sanitation access; health risks from unmanaged waste; weak water management
- Limited mobilisation of own-source financial resources by PRIs
- Complex approval systems
- Gender participation gaps

Opportunities

- One District, One Product
- Digital capacity-building efforts
- Local financial autonomy; smart urban governance
- Efforts towards gender parity
- Green technology adoption
- Marginalised community upliftment
- Tree planting initiatives and improved rural sanitation
- SHGs: Increasing income of households

Threats

- Rapid population growth
- Extreme climate events; air quality deterioration
- Economic inequality tensions; social instability concerns
- Monsoon unpredictability; disease spread in urban zones
- Water scarcity risks - Groundwater overextraction; industrial water pollution

WHERE DO WE WANT TO GO?

VISION



Haryana enjoys **Future-Proofed Human Settlements** through equitable and balanced regional growth, rural and urban environmental harmony, and technological innovation by empowered local self-governments.

MISSION



To ensure that **Future-Proofed Human Settlements** is the foundation for sustainable balanced regional development with a clear mandate for the local self-governments to implement it. For this, the **CCC Approach—Clean, Carbon Negative, and Conducive Environment**—provides a comprehensive framework that aligns environmental sustainability with economic growth and social equity.

GOALS

- Manufacturing Value Added (MVA) as a proportion of GDP at current prices - 18.36%
- Percentage of GSVA in Industries Sectors (at current price) to total GSVA – 30%
- MSME Udyam Registration per 1,00,000 population - > 5,000
- Renewable energy share in total installed capacity - 70%
- Carbon intensity of GSDP (tonnes Co2e/ INR crore) –20
- AI adoption rate in the manufacturing sector – 90%

ASPIRATIONAL FUTURE

Haryana aspires to empower local self-governments to achieve progress in all regions of the state through effective delivery of services and welfare schemes, elevating the standard of living for all in urban and rural areas. This would be achieved through pioneering initiatives in environmental sustainability, such as promoting alternative fuel vehicles, developing bike-sharing infrastructure, managing waste and air pollution and conserving water resources. It will focus on proactive initiatives to increase participation of women and the third gender in the workforce through diverse employment opportunities across sectors, supported by strategic investments in robust infrastructure across all districts.

HOW WILL WE REACH THERE?

Regional Equity and Infrastructure Development: Prioritise high-poverty and peri-urban districts through bottom-up needs assessments and inclusive capital investment plans. Increase infra budgets, build local institutional capacity, and monitor socioeconomic and environmental impact.

Water Security and Management: Ensure safe, reliable water access in cities through participatory planning and water-sensitive urban design. Enforce rainwater harvesting, revive urban waterbodies, and deploy smart metering systems. Mobilise green bonds for infrastructure upgrades and strengthen municipal capacity for data-driven, resilient water governance.

Environmental Sustainability: Improve waste and air quality management by expanding monitoring systems, enforcing policies, and adopting circular economy practices. Promote EVs, green infrastructure, and aim for zero-waste cities with citizen engagement.

Inclusive Development for the Marginalised: Mandate participatory governance and make development plans inclusive. Expand vocational training, ensure digital access, and embed rights-based awareness and mobile service delivery models for equity.

Empowering Local Self-Governance: Boost local financial independence through increased fund transfers, municipal bonds, PPPs and expanding avenues of financing to strengthen community participation and local self-governance. Strengthen governance via training, capacity-building programmes, social audits, legislative power, and policy alignment with SDGs.

Planned Urban Growth and Liveability: Revise urban planning laws using AI tools and digitised records. Promote affordable housing, climate-resilient infrastructure, improved public transport, integrated waste systems, and peri-urban job creation to curb migration pressures.

Improving Quality of Life in Rural Areas: Adopt a holistic rural development strategy focused on basic services, robust infrastructure, and inclusive growth. Ensure access to clean drinking water, sanitation, and quality healthcare; invest in rural connectivity and amenities; generate employment through agri-based and non-farm activities; empower communities; and promote sustainable management of natural resources to address the drivers of urban migration.

3 BIG ACTIONS

01

Future-First Growth Zones

03

EquiLead

02

Gram Sabha 5.0

INTRODUCTION

Haryana has embarked on a remarkable journey of economic growth, marked by a significant expansion in its service sector from 5.0% in 2019-20 to 8.4% in 2024-25¹, and a notable rise in per capita income from INR 2,32,530 to INR 3,53,182 during the same period.² The state's strength in industrial clusters, particularly those centred in the NCR, has provided substantial economic output and employment opportunities. A data-driven governance approach has facilitated detailed assessments and targeted interventions.

However, this impressive growth has been accompanied by persistent and stark development imbalances. This is dramatically evidenced by Gurugram's per capita income being nearly eight times that of Nuh, despite their geographical proximity, highlighting profound regional disparities in economic development.

To strategically promote the geographical dispersal of industry and address regional imbalances, the State has categorised its Development Blocks into four distinct groups: A, B, C, and D, based on their level of industrialisation, socioeconomic development, locational advantage (connectivity), infrastructure, and skill development. The state's industrial distribution further underscores this imbalance:

- Industrial Model Townships (IMT) and Industrial Estates (IE): Category A development blocks (highly industrialised, well-connected) account for 35% of IMTs/IEs, followed by Category B (32%), Category C (26%), and Category D (least industrialised, less connected) at only 6%³.
- Large/Mega Industrial Projects: An even more pronounced concentration is observed with large and mega projects, where Category A blocks host a staggering 76% of such projects, while Category B accounts for 9%, Category C for 13%, and Category D for a mere 2%. This uneven distribution significantly contributes to the disparity in economic output and employment opportunities across the state⁴.

Beyond regional economic disparities, Haryana faces other critical challenges. Water scarcity is a growing concern, impacting both agriculture and urban consumption. Environmental degradation, including air and water pollution, continues to be a pressing issue, threatening public health and ecological balance. The marginalisation of vulnerable communities remains a significant challenge, requiring targeted interventions to ensure inclusive growth. Unplanned urban growth continues to strain existing infrastructure and public services, leading to congestion and reduced quality of life in many areas. Furthermore, local self-governance institutions require further strengthening to effectively address community needs and ensure equitable development at the grassroots level.

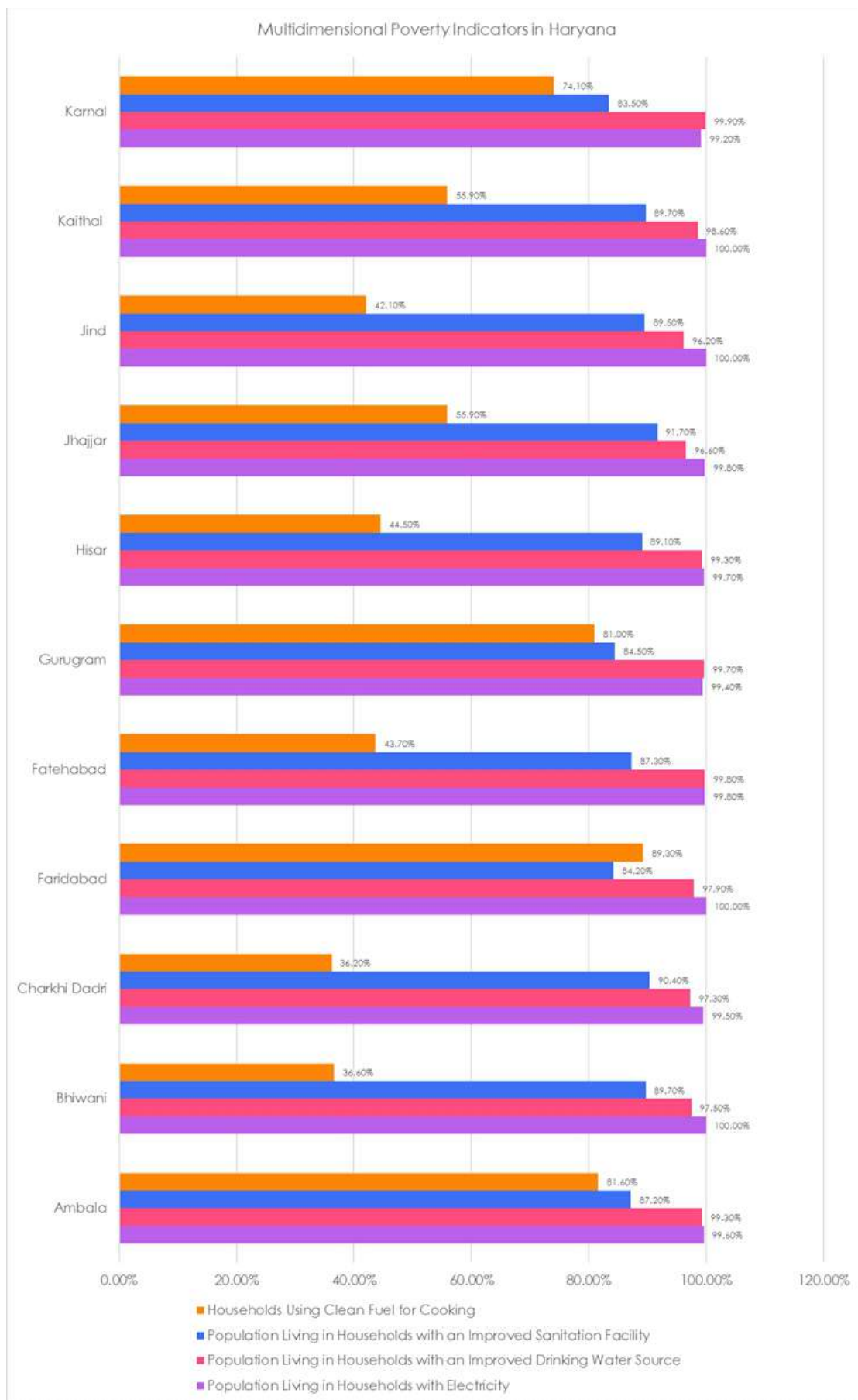
These existing realities present both a strong foundation and a critical challenge for Haryana's journey towards its Vision 2047. This vision is deeply aligned with the principles of equitable and sustainable development and aims to contribute significantly to national and global SDGs, particularly those related to poverty eradication, reduced inequalities, clean water and sanitation, sustainable cities, and climate action.

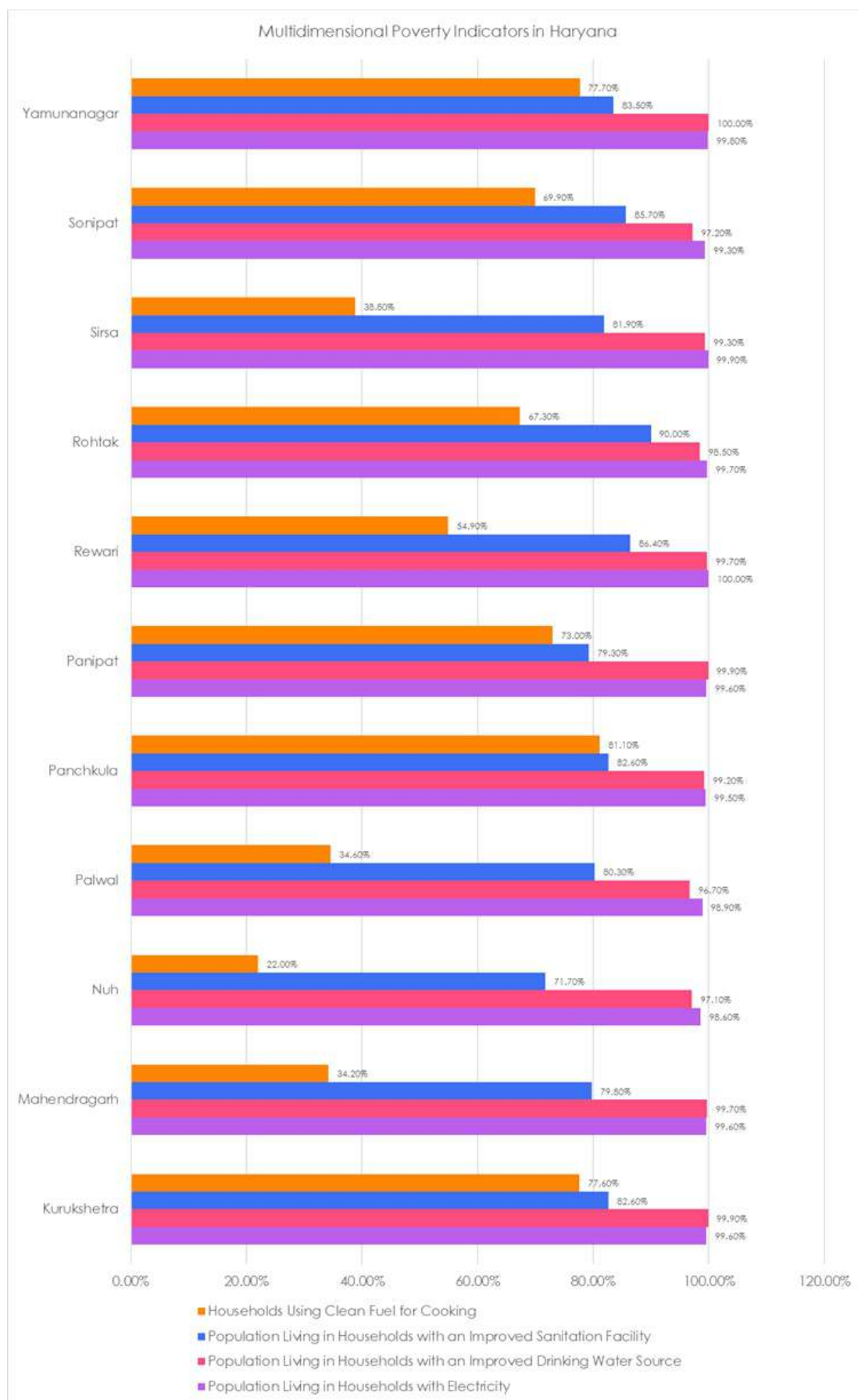
By comprehensively addressing and eliminating these profound regional disparities, Haryana can fully unleash its potential, propelling the state towards its ambitious goal of a trillion dollar plus economy by 2047. This document details the strategic path forward to ensure inclusive prosperity and environmental resilience for all citizens of Haryana.

WHERE ARE WE?

- Service sector growth: 5.0% (2019-20) to 8.4% (2024-25)⁵
- Highest per capita income (2020-21): Gurugram (INR 9.04 lakh)⁶
- Lowest per capita income (2020-21): Nuh (INR 1.06 lakh)⁷
- Multidimensional poverty rate: 7.07% statewide⁸
- Highest poverty districts: Nuh (39.99%), Palwal (14.71%), Fatehabad (7.51%)⁹
- Lowest poverty districts: Panchkula (1.42%), Charkhi Dadri (2.85%), Rewari (2.91%)¹⁰
- Sanitation access disparity: Mewat (71.7%) vs. Jhajjar (91.7%)¹¹
- Clean cooking fuel access: Mewat (22%) vs. Faridabad (89.3%)¹²
- Service Sector Revenue: Generated INR 65,828 crore in FY 2024–25, a 21% increase from FY 2023–24, with Gurugram as the largest contributor.¹³

As of 2024-25, Haryana's administrative structure includes 22 districts, 80 sub-divisions, 94 tehsils, 49 sub-tehsils, and 140 blocks. The state has made significant strides in connectivity, with 7,412 villages connected by metalled roads as of 2023-24. Furthermore, the state boasts a 100% average for habitations with access to all-weather roads under the PMGSY in 2024, and all gram panchayats are equipped with internet connectivity. As of March 2024, the number of youth certified in short-term or long-term training schemes (within the 15-29 age group) across various districts is as follows: Karnal has 106 certifications, Faridabad has 242, Fatehabad has 87, Nuh has 102, Panchkula has 39, and Sirsa has 150. These figures contribute to a state total of 726 youth certifications.



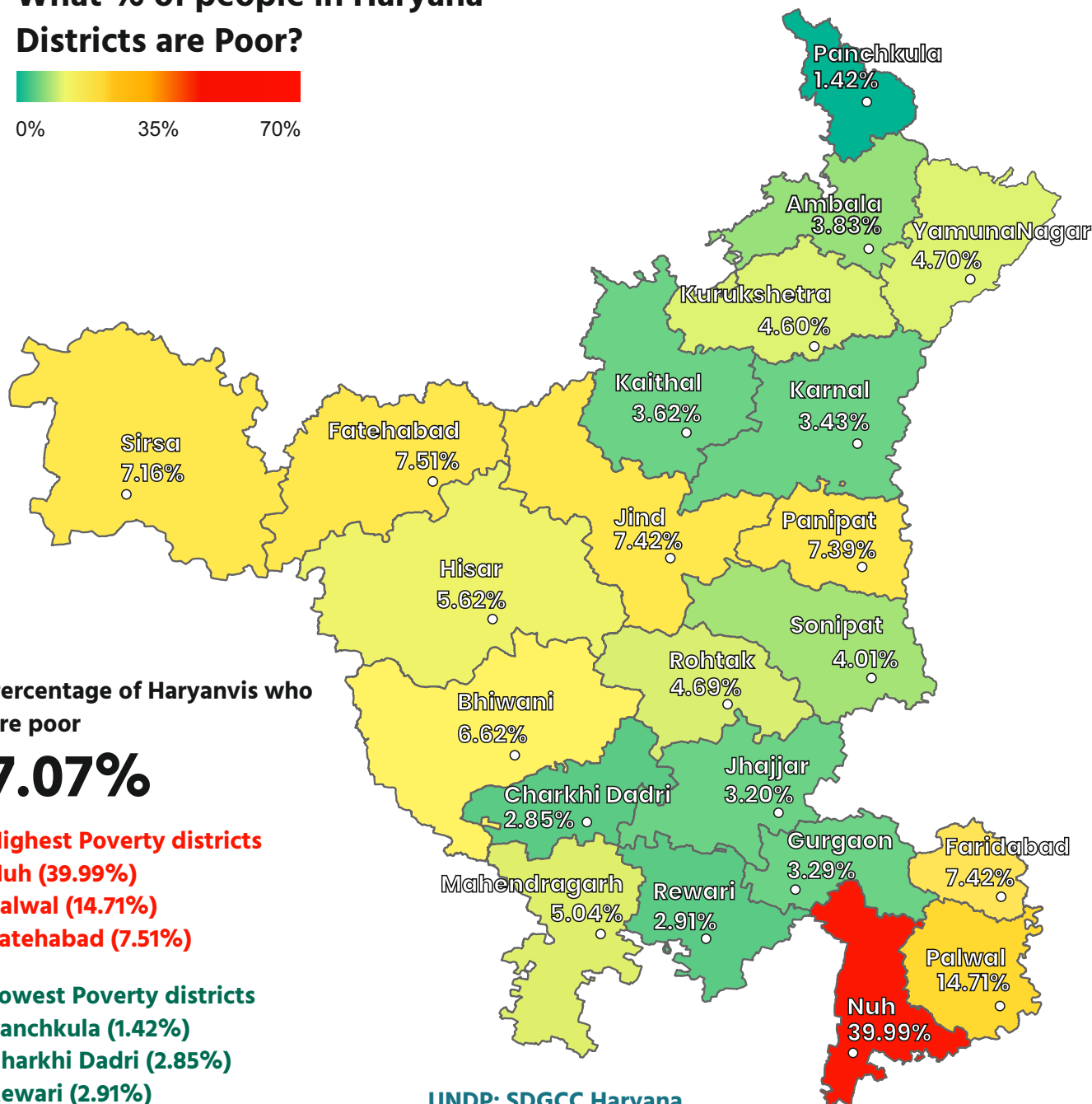
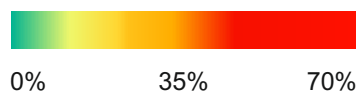


Graph 39 (a) & (b): Multidimensional Poverty Index Indicators in Haryana
(Source: Haryana SDG District Index 2022: Consultative Document)

Source: National Multidimensional Poverty Index: A Progress Review 2023 (NITI Aayog)

<https://www.niti.gov.in/sites/default/files/2023-08/India-National-Multidimensional-Poverty-Index-2023.pdf>

What % of people in Haryana Districts are Poor?



Percentage of Haryanvis who are poor

7.07%

Highest Poverty districts

Nuh (39.99%)

Palwal (14.71%)

Fatehabad (7.51%)

Lowest Poverty districts

Panchkula (1.42%)

Charkhi Dadri (2.85%)

Rewari (2.91%)

UNDP: SDGCC Haryana

| Division Hisar | HCR 2021 | HCR 2023 |
|----------------|----------|----------|
| Hisar | 9.71% | 5.62% |
| Fatehabad | 11.02% | 7.51% |
| Jind | 9.16% | 7.42% |
| Sirsa | 14.52% | 7.16% |

| Division Rohtak | HCR 2021 | HCR 2023 |
|-----------------|----------|----------|
| Rohtak | 13.72% | 4.69% |
| Jhajjar | 5.82% | 3.20% |
| Charkhi Dadri | - | 2.85% |
| Bhiwani | 12.78% | 6.62% |
| Sonipat | 6.35% | 4.01% |

| Division Gurugram | HCR 2021 | HCR 2023 |
|-------------------|----------|----------|
| Gurugram | 10.39% | 3.29% |
| Mahendragarh | 6.29% | 5.04% |
| Rewari | 11.08% | 2.91% |

| Division Ambala | HCR 2021 | HCR 2023 |
|-----------------|----------|----------|
| Ambala | 1.99% | 3.83% |
| Panchkula | 2.47% | 1.42% |
| Yamunanagar | 4.47% | 4.70% |
| Kurukshetra | 6.42% | 4.60% |

| Division Rohtak | HCR 2021 | HCR 2023 |
|-----------------|----------|----------|
| Karnal | 6.40% | 3.43% |
| Panipat | 8.12% | 7.39% |
| Kaithal | 7.83% | 3.62% |

| Division Faridabad | HCR 2021 | HCR 2023 |
|--------------------|----------|----------|
| Faridabad | 10.70% | 7.42% |
| Palwal | 26.98% | 14.71% |
| Nuh | 60.50% | 39.99% |

Figure 5: Percentage of Haryanvis who are poor (Source: National Multidimensional Poverty Index 2023)

FUTURES TRIANGLE

(*Refer to page number 28 for an in-depth overview of the Futures Triangle.)

The Futures Triangle methodology provides a powerful analytical framework for understanding the complex interplay of forces shaping Haryana's regional development trajectory. The tables below detail the positive and negative aspects within each dimension, highlighting the multifaceted nature of Haryana's development context. This analysis serves as a foundation for identifying strategic interventions that can amplify positive forces while mitigating constraining factors, ultimately helping to navigate toward the desired future vision for balanced regional development by 2047.

Pushes of the Present

Positive

Smooth service delivery through **Parivar Pehchan Patra initiative**

Housing schemes addressing inequality through **Pradhan Mantri Awas Yojana**

Reservation policies fostering inclusivity for marginalised communities

Women empowerment through creche policies and SHGs

Environmental protection through tree cultivation and green belts

Air Pollution Reduction through Clean Mobility Solutions by promoting Evs, bike-sharing, e-rickshaws, and solar-powered farm equipment in both urban and rural areas.

Negative

Imbalanced regional development exacerbating socioeconomic inequalities

Self-segregated spaces based on class, caste, and religion

Poor urban environments with overcrowded slums and sanitation concerns

Water scarcity exacerbated by unpredictable monsoons and increased demand

Threat to public health from **industrial waste** in water bodies

Pull of the Future

Positive

Diversified employment opportunities across regions

Negative

Population growth and unsustainable resource management leading to water scarcity

Positive

Balanced industrial development via One District, One Product scheme

Leveraging **technology for capacity building** in diverse sectors

Water misuse prevention through regulations and technology-driven solutions

Enhanced **access to economic opportunities** for marginalised communities

Targeted **interventions for gender parity** in workforce participation

Promoting effective governance through **financial autonomy** to local bodies

Weights of the Past

Positive

Introduction of **PRIs** strengthening local governance

Proximity to Delhi boosting industry and infrastructure investment

Fertile land and strong agricultural base from **Green Revolution**

Negative

Increased population density raising the risk of **communicable diseases**

Urbanisation-led **extreme weather events** and climate change impacts

Economic inequality leading to **increased social instability**

Negative

Industrial clustering leading to uneven regional development

Water-intensive crop cultivation depleting groundwater reserves

Social disparities resulting in unemployment and limited opportunities

Limited financial autonomy and complex approval processes for local bodies

WHERE DO WE WANT TO GO?

VISION 2047

By 2047, our vision is to ensure that every district and community in Haryana lives in a Future-Proof Climate and Environment which thrives through equitable growth, environmental harmony, and technological innovation. Through collaborative governance and empowered local bodies, we envision a state that not only meets the current needs but also anticipates and shapes a prosperous future for all its citizens.

- Enhance regional equity and bridge the development gap across districts by leveraging technology and innovative governance models.
- Strengthen local self-government by empowering PRIs with more autonomy and resources. Implement comprehensive water management and environmental protection strategies to ensure
- sustainability and quality of life. Drive inclusive growth by integrating marginalised communities into the mainstream development process
- and improving access to essential services. Foster a culture of innovation and skill development to capitalise on the demographic dividend and bolster
- the state's position in the national economy.

STRATEGIC MISSION*

Future-Prepared Human Settlements – The CCC Approach

Haryana's vision for 2047 recognises that sustainable regional development must be built upon resilient and inclusive human settlements. The CCC Approach—**Clean, Carbon Negative, and Conducive Environment**—provides a comprehensive framework that aligns settlement sustainability with economic growth and social equity. This integrated approach addresses the challenges of urbanisation, rural transformation, and resource management identified in previous sections while creating opportunities for innovation, livelihood generation, and improved quality of life across all districts. By embedding settlement-focused considerations into all aspects of planning and governance, this approach ensures that development activities enhance rather than strain land, water, and infrastructure systems, creating a virtuous cycle of sustainability that supports balanced regional development.

*Aligned Departments: Forests, Environment, Renewable Energy, Industries & Commerce, Agriculture, Horticulture, Animal Husbandry, Fisheries, Cooperation, Food & Supplies

1. CLEAN: Restoring Air, Water, Soil, and Rivers

Clean and well-managed human settlements form the foundation of balanced regional development, ensuring safe living conditions while supporting economic prosperity and social well-being. Haryana's approach to settlement renewal focuses on comprehensive pollution control and ecosystem rehabilitation across all districts. Drawing inspiration from successful initiatives like the Namami Gange programme and China's Air Pollution Control Action Plan, the state will implement advanced treatment technologies for industrial and municipal waste, enforce stringent emission standards, promote natural/organic farming practices to restore soil health, and undertake large-scale riverbank restoration. These efforts will be supported by regulatory reforms, market-based mechanisms, and extensive community participation programmes that cultivate shared responsibility for clean living spaces. By restoring the basic elements of healthy human settlements—air, water, and soil—Haryana will create the foundation for sustainable growth across all regions.



2. CARBON NEGATIVE: Sustainable Infrastructure and Behaviour Change

Haryana aims to move beyond **carbon neutrality** to become a net carbon sink by 2047, demonstrating that human settlements can thrive while reducing their climate footprint. This transformation will require fundamental shifts in energy systems, built infrastructure, transport networks, and citizen lifestyles. Following models like carbon-negative Bhutan and drawing from India's LIFE Campaign (Lifestyle for Environment), Haryana will adopt a comprehensive carbon management strategy that integrates renewable energy, energy-efficient building codes, sustainable transport systems, and circular economy practices within settlements. Agricultural linkages will be leveraged to support carbon sequestration without compromising food security, while afforestation and green belts around cities and villages will strengthen natural carbon sinks. Equally vital will be nurturing behavioural change through awareness programmes, incentives, and community engagement that enable citizens to make climate-positive choices in their homes, mobility, and consumption. This holistic approach recognises that carbon-negative settlements require both innovative infrastructure and inclusive social transformation.

3. CONDUCTIVE ENVIRONMENT: Sustainable Cities and Disaster Preparedness

A **conductive environment** is one that enhances quality of life while building resilience to risks and future uncertainties. As Haryana rapidly urbanises and rural areas adapt to shifting climate patterns, creating such settlements becomes critical for sustainable development. Drawing inspiration from Singapore's integrated waste and water management models and Rajasthan's Great Green Wall of Aravalli initiative, Haryana will implement settlement planning frameworks that integrate green infrastructure, efficient resource cycles, and disaster preparedness. Cities will be redesigned with extensive green corridors, water-sensitive urban design, and circular material flows, while villages will benefit from landscape-level interventions that prevent land degradation, conserve biodiversity, and ensure resource security. Early warning systems, climate-resilient housing, and community-based disaster management programmes will strengthen preparedness for floods, heatwaves, and other hazards. This pillar recognises that safe, resilient, and conducive settlements are essential for long-term prosperity and must be embedded into the core of urban and rural development planning.

GOALS

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|------------------------------------|--|--------------------------------|-----------------------------------|-------------------------|--|
| Income disparity ratio (highest to lowest district) | 8.52:1 (Gurugram vs Nuh) | Economic Survey of Haryana | 5:1 | 4:1 | 3:1 | Benchmarked against OECD regional disparity standards; reduction targets based on successful models from South Korea and China in reducing regional inequalities |
| Multidimensional Poverty Rate | 7.07% statewide | NITI Aayog | < 3% | 2% | 0% | Aligned with SDG 1 (No Poverty) and national poverty elimination targets; follows trajectory of successful poverty reduction in states like Kerala |
| High-poverty districts rate (Nuh, Palwal, Fatehabad) | 39.99%, 14.71%, 7.51% respectively | Haryana SDG District Index 2022 | < 15%, < 7%, < 3% respectively | < 9.7%, < 4.5%, 3.9% respectively | 0% across all districts | Based on targeted interventions following SDG 1 implementation trajectory; benchmarked against global best practices in poverty elimination |
| Urban population with access to safe, affordable public transport | 45% (estimated) | Department of State Transport, Haryana | 70% | 77% | 90% | Benchmarked against global sustainable mobility standards and UN-HABITAT recommendations for accessible urban transportation |

| Indicator | Baseline | Baseline Source | Target 2030 | Target 2036 | Target 2047 | Benchmarks |
|---|-----------------|--|-------------|-------------|-------------|--|
| Percentage of Gram Panchayats with own source revenue > 25% of total budget | 15% (estimated) | Development & Panchayats Department, Haryana | 40% | 52% | 75% | Benchmarked against high-performing states in fiscal decentralisation (Kerala at 28%); aligned with 15th Finance Commission recommendations on local body self-sufficiency |
| Women-owned MSMEs as percentage of total registered businesses | 14% (estimated) | Department of Industries & Commerce, Haryana | 25% | 30% | 40% | Based on global gender equality standards in entrepreneurship and successful models from Nordic countries; aligned with national women entrepreneurship goals |

POSSIBLE FUTURE SCENARIOS

BUSINESS AS USUAL FUTURE

- Weak financial systems in local bodies will lead to poor revenue collection and inaccurate records. PRIs will stay dependent on central and state funds, limiting local decision-making and development.
- Industrial growth will stay limited to NCR cities like Gurugram and Faridabad, while other regions will miss out on development.
- Socioeconomic gaps between districts will widen, with backward areas like Nuh falling further behind developed ones like Gurugram.
- If groundwater overuse continues, water resources will shrink and pollution from industries will worsen water quality and harm the environment.
- The increasing waste generation will contribute to environmental degradation and public health risks. Without improved waste management practices, improper disposal will contaminate land, water, and air, adversely impacting agriculture, water resources, and public health.

POSITIVE DISRUPTIVE FUTURE (OPPORTUNITIES)

- The Haryana Enterprises and Employment Policy 2020, together with the Haryana Development and Regulation of Urban Areas (Second Amendment) Act, 2023, and the Haryana Municipal Urban Built-Plan Reform Policy 2023, drive balanced regional growth through strategic infrastructure investments.
- Development of Metropolitan Authorities in cities like Panchkula, Sonipat, and Hisar focuses on augmenting essential services and infrastructure, promoting urban development while preserving environmental integrity.
- Inclusive Tech tools and mechanisms like PPP and Jan Sahayak App make government schemes more effective.
- Urban-SVAMITVA scheme enhances property ownership and benefits, while strategic investments from the Haryana Urban Development Fund support development works in newly regularised colonies.
- The amendment of the Haryana Panchayati Raj Act reserves 50% of seats for women, promoting gender equality. A dedicated engineering wing in each Zila Parishad reflects significant improvements in rural infrastructure management.
- Goals to increase the utilisation of treated wastewater to over 900 MLD by December 2025 and achieve full reuse by December 2028 shows Haryana's commitment to sustainable water use.

NEGATIVE DISRUPTIVE FUTURE (RISKS)

- As cities expand, land use conflicts will increase, forcing rural communities to relocate and lose their livelihoods.
- Uneven growth will widen social and economic gaps, leading to more exclusion, inequality, and unrest in society.

ASPIRATIONAL FUTURE

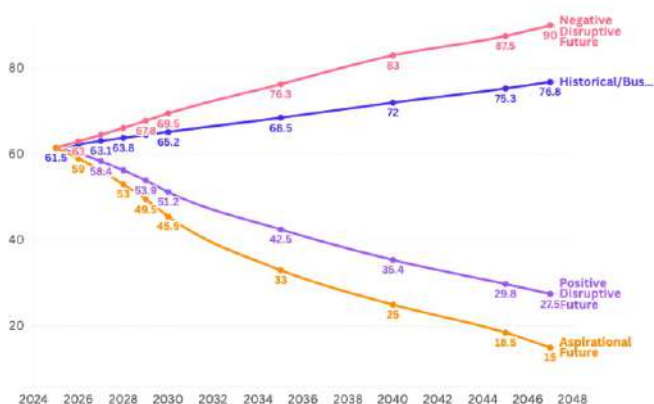
- The upcoming 10 new Industrial Model Townships (IMTs) will support industrial expansion, create jobs, and promote balanced regional development across the state.

NEGATIVE DISRUPTIVE FUTURE (RISKS)

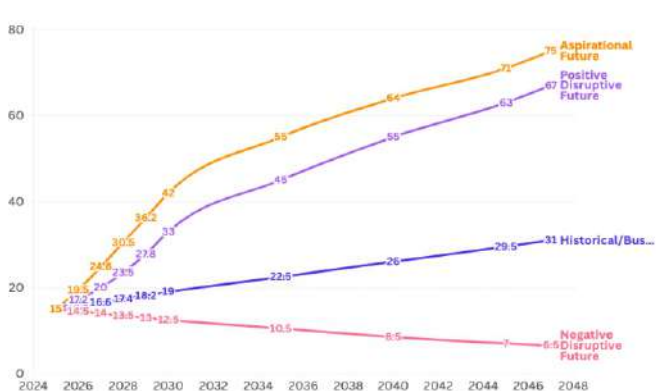
- Unpredictable weather and droughts will hurt farming, water supplies will shrink, and air pollution will worsen—especially in NCR cities.
- Poor sanitation, drainage, and transport systems will struggle to meet the growing needs of urban areas.
- Overuse of groundwater will cause serious water shortages, affecting both farming and daily household needs.
- Urban healthcare systems will become overwhelmed, unable to handle rising health problems, leading to more sickness and deaths.
- More frequent heatwaves and floods will put extra pressure on disaster response systems, increasing the state’s vulnerability.
- Weak solid waste management (SWM) will lead to more pollution and health issues, making it harder to manage waste in both cities and villages.

ASPIRATIONAL FUTURE

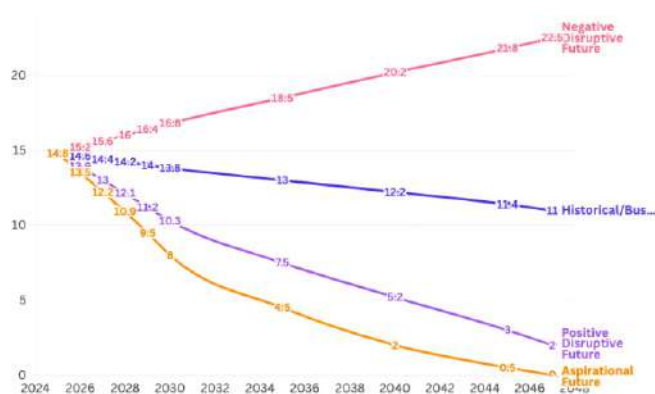
- The Haryana AI Mission will promote data-driven policymaking, digital governance, and advanced training. Dedicated AI hubs in Gurugram and Panchkula will train over 50,000 youth and professionals, preparing them for future job markets.
- Big projects like the Haryana Orbital Rail Corridor and Delhi-Panipat RRTS boost regional connectivity, helping people travel faster and reducing the gap between developed and underdeveloped areas.
- The Global City in NCR sets a new example of modern urban living—blending business, sustainability, and smart design to attract top global companies and talent.
- With over 6200+ Gram Panchayats connected through fibre optics, digital inclusion reaches every corner, bringing the internet and digital services to even the most remote villages.
- Smart water systems and greywater recycling help manage water better—ensuring clean and fair water access for homes, farms, and industries, while also protecting the environment.



Graph 40 (a): Groundwater Exploitation (Percentage of blocks categorised as over-exploited)



Graph 40 (b): Local Governance Financial Autonomy (Percentage of Gram Panchayats with own source revenue > 25% of total budget)



Graph 40 (c): Urban Slum Population (Proportion of urban population living in slums)

HOW WILL WE REACH THERE?

Transforming Haryana's regional development landscape requires addressing complex, interconnected challenges through coordinated multi-stakeholder approaches. The primary challenges include severe regional disparities, unsustainable water resource management, environmental degradation, exclusion of marginalised communities, weak local governance capacity, and unplanned urbanisation.

To overcome these challenges, we must balance economic growth with environmental sustainability and social equity. This requires strengthening local governance institutions with greater financial autonomy and decision-making powers, investing in sustainable infrastructure that prioritises disadvantaged regions, implementing comprehensive water management systems, developing circular economy approaches to waste management, and ensuring inclusive policies that reach the most vulnerable populations.

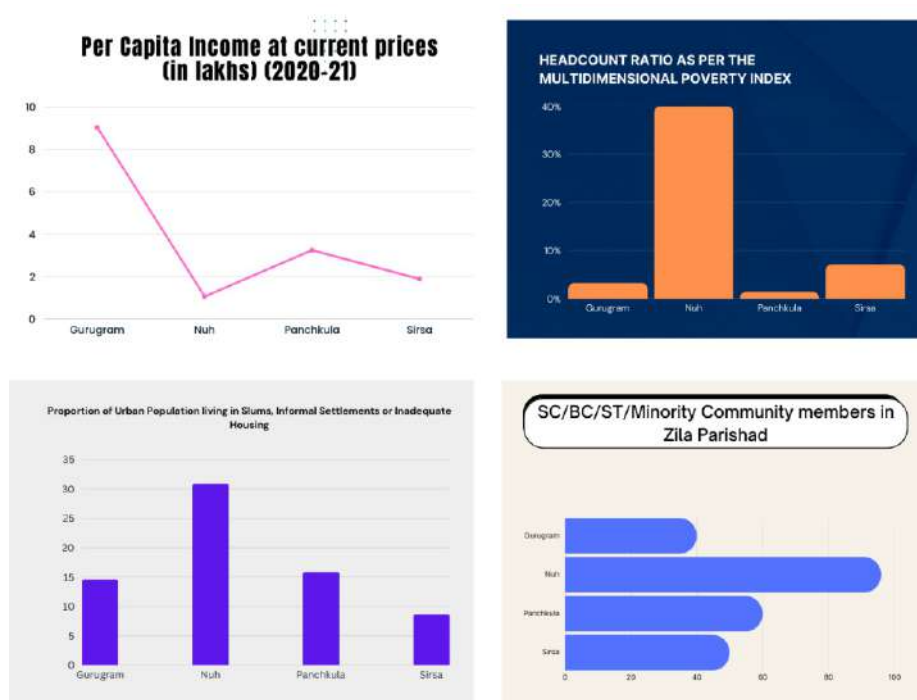
Effective governance is key, relying on transparent and accountable frameworks. This requires dedicated funding to ensure resources are distributed fairly, and it depends on engaging communities in planning. Success also hinges on building strong partnerships between the government, private sector, non-profits, and academic institutions. By focusing on these specific goals and taking action across various sectors, Haryana can achieve a model of balanced, sustainable, and inclusive growth by 2047.

Issues

- 🔍 Unbalanced Regional Development – Increasing District Disparities
- 🔍 Water Scarcity/Impurity, Water Management
- 🔍 Clean Environment – Waste Management, Air
- 🔍 Last Mile Reaching the Marginalised and Excluded
- 🔍 Strengthening Local Self-Government
- 🔍 Unplanned Growth and Urban Migration

ISSUE 1: UNBALANCED REGIONAL DEVELOPMENT

Haryana exhibits stark regional disparities, with economic prosperity concentrated primarily in districts surrounding the NCR, while other regions lag significantly behind. This development imbalance is most dramatically evidenced by Gurugram's per capita income being nearly eight times that of Nuh, despite their geographical proximity. To address such imbalances, the Haryana Government has initiated targeted interventions in less-developed areas, including the launch of an action plan for Morni Hills in Panchkula. Focused on promoting eco-tourism and adventure tourism, this plan includes the development of Tikkar Taal and the Adventure Park as key attractions. These initiatives aim to enhance the natural and cultural appeal of the region while catalysing local economic activity. However, despite such efforts, regional disparities have persisted and even widened over time, challenging conventional economic convergence theories and creating serious social, financial, and infrastructural challenges that require sustained strategic intervention.



Graph 41: District Disparities between Gurugram, Nuh, Panchkula and Sirsa SDGCC and SJHIFM. (Source: Haryana District Index 2022 Consultative Document)

Current Status

- ✔ 11.16% of Haryana's population living below the national poverty line¹⁴
- ✔ Multidimensional poverty headcount ratio: 7.07%¹⁵
- ✔ Highest poverty districts: Nuh (39.99%), Palwal (14.71%), Fatehabad (7.51%)¹⁶
- ✔ Lowest poverty districts: Panchkula (1.42%), Charkhi Dadri (2.85%), Rewari (2.91%)¹⁷

Factors Influencing the Issue

Governance quality and administrative effectiveness significantly impact regional development, as inefficient processes and misaligned priorities can exacerbate disparities. Crucially, the quality and scope of community

representation within local governance bodies like the Zila Parishad directly influence equitable resource allocation and responsive policy-making, especially for marginalised areas. Economic forces, including market concentration, agglomeration benefits, and industrial clustering, naturally favour already-developed areas, creating self-reinforcing growth cycles. Social factors such as educational and healthcare inequalities contribute to differing development trajectories, while environmental vulnerabilities disproportionately affect economically marginalised regions. Legal frameworks governing land use, resource allocation, and business regulations further shape the development landscape, collectively creating complex challenges that require multidimensional solutions.

Impacts of the Issue

Direct Impact

- Migration towards more developed centres
- Infrastructure burden in developed centres
- Employment challenges in less developed areas

Indirect Impact

- Environmental degradation in air quality, water depletion, and waste management
- Increased per capita income gap between regions
- Higher unemployment rates and limited economic mobility in disadvantaged areas

Global Learnings

Global Best Practice

Brazil – Novo PAC¹⁸: Brazil's Novo Programa de Aceleração do Crescimento (Novo PAC) prioritises projects in transportation, energy, sanitation, and urban development, with a focus on underserved areas such as the Amazon and semi-arid regions. By combining public funding with private sector partnerships, Novo PAC aims to enhance connectivity, improve public services, and advance sustainable development in historically marginalised districts.

Disruptive Technologies - Blockchain for Transparent Governance

Implementing blockchain technology for transparent and secure record-keeping in governance processes can enhance accountability and reduce corruption. Smart contracts can automate various administrative processes, ensuring efficiency and reducing bureaucratic hurdles. Dubai, UAE, has launched the "Dubai Blockchain Strategy," aiming to use blockchain technology for all government documents to create the world's first fully digitised government by 2021.¹⁹

Possible Pathways

Short-Term Pathway (2030)

Assess Needs in High-Poverty Districts

- Conduct bottom-up assessments with PRIs, ULBs, CSOs, and officials
- Use findings to guide local policy
- Strengthen community representation in Zila Parishads to serve as direct conduits for these bottom-up assessments, ensuring findings truly reflect local realities and guide responsive local policy

Formulate Rural-Urban Transition Policy

- Support peri-urban areas facing urban pressures

Develop Capital Investment Plans (CIPs)

- Setting up of dedicated new sector-specific regional hubs, similar to Global City, enabling easy access to research, innovation and skilled workforce - Fintech, IoT, AI, etc
- Leverage PPPs to stimulate infrastructure development in the underdeveloped areas to facilitate private investments without overburdening state finances

Ensure Inclusive, Sustainable Infrastructure

- Address the needs of marginalised groups and environmental standards
- Leverage community representatives in Zila Parishads to provide direct input on specific infrastructure needs that benefit underserved populations and ensure projects are culturally and environmentally sensitive

Increase Infra Budget for Target Areas

- Allocate higher state funds for focus regions
- Dispersal of industries to less developed areas of the State, supported by the development of New Integrated Industrial Townships & Industry Clusters

Support Local Enterprises:

- Launch tailored schemes for small businesses and entrepreneurs
- New Regional Hubs: Small Industrial Parks under PADMA scheme & ODOP

District Investment Facilitation Cell

- Establish District Investment Facilitation Cells as single-window platforms to provide comprehensive support to MSMEs and local start-ups by offering guidance, approvals, and financial linkages. These Cells would be closely aligned with Haryana's MSME and startup promotion policies and would also address the challenge of many entrepreneurs registering their ventures in neighbouring states like Delhi instead of Haryana, thereby strengthening the state's startup ecosystem and ensuring greater local enterprise growth

District Competitiveness Index:

- Introduce the District Competitiveness Index to benchmark and monitor district-level performance in areas such as employment generation, innovation capacity, and overall business readiness
- Engage Zila Parishad members with strong community ties to identify and promote local entrepreneurial talent and ensure schemes are adapted to specific regional contexts

Build Capacity of Local Institutions:

- Partner with CSOs and academia for training PRI and ULB staff
- Focusing on Science, Technology, Engineering, and Mathematics (STEM) courses with next-gen skills (AI/ML/Blockchains), Driving Innovation
- Integrate training for community representatives within Zila Parishads on effective governance, financial oversight, and development planning to enhance their impact

Ensure Transparency through Social Audits

- Regular audits to build public trust and accountability

Invest in Digital Governance Systems:

- Upgrade tech infrastructure for innovation in governance

Long-Term Pathway (2047)

Monitor and Evaluate Infrastructure Progress

- Track implementation and performance in target areas

Assess Development Impact

- Conduct socioeconomic and environmental impact studies

Strengthen Local Governance Capacity

- Continue training on governance and financial management
- Reinforce the role of Zila Parishads, ensuring diverse community representation to sustain bottom-up planning and oversight for balanced growth across all regions.

Expand Focus to New Peri-Urban Areas

- Scale infrastructure planning to emerging transition zones
- Driving balanced regional growth with industry as the key economic anchor

- Creating a vibrant support ecosystem for MSMEs, particularly in the peri-urban area
- Dispersal of industries to less developed areas of the State, supported by the development of New Integrated Industrial Townships (Industrial & Residential usages), Incentives & Ease of Doing Business support

District Growth Plan

- Efforts can be directed toward reinforcing local governance and integrated planning processes. Each district ought to develop a District Growth Plan that capitalises on its specific economic strengths be it agriculture, industry, tourism, or services. These localised plans should remain aligned with the overarching framework of Haryana's Future Department, ensuring that district level initiatives contribute cohesively to the state's long-term vision.

ISSUE 2: WATER SCARCITY/IMPURITY, WATER MANAGEMENT

Haryana is currently confronting a critical water security challenge, driven by intensive agricultural practices, rapid urbanisation, expanding industrial operations, and increasingly erratic monsoon patterns. With groundwater extraction at 135.74%²⁰ of its extractable resources, the state faces a highly unsustainable trajectory, risking significant aquifer depletion over the next two decades. The predominance of water-intensive crops such as paddy and sugarcane has exacerbated pressure on surface and groundwater reserves, demanding urgent, systemic intervention.

To address this, the state has prioritised agricultural diversification as a strategic response, promoting a gradual shift from water-intensive crops to less water-demanding alternatives such as pulses, oilseeds, fruits, vegetables, and fodder. This approach balances agro-ecological sustainability with improved farm incomes and soil health. The 'Mera Pani Meri Virasat' initiative has been pivotal in driving this transition by offering financial incentives, advisory services, and institutional support to farmers in over-exploited groundwater zones willing to adopt alternate cropping patterns.

In parallel, Haryana is expanding the deployment of micro-irrigation systems, including drip and sprinkler technologies, to enhance water-use efficiency in agriculture. These initiatives optimise resource utilisation and contribute to reducing input costs, strengthening climate resilience, and promoting sustainable agricultural growth. Together, these integrated interventions—crop diversification, water-efficient technologies, and enabling policy frameworks—constitute a comprehensive strategy to safeguard Haryana’s water resources while supporting resilient and inclusive rural livelihoods.

Current Status

- ✔ 97.7% of rural population receives safe drinking water through piped supply²¹
- ✔ 99.99% of rural population has access to improved drinking water sources²²
- ✔ 135.74% groundwater withdrawal against availability²³
- ✔ 60% of blocks are over-exploited for water²⁴
- ✔ The State of Haryana has also undertaken proactive measures for flood control and effective urban drainage management. Drainage infrastructure across ULBs has been systematically mapped and maintained. Out of a total 2,116 km of municipal drains, 2,030 km are actively maintained by Municipal Corporations. As part of pre-monsoon preparedness and year-round upkeep, 943.68 km of drains have been cleaned, and 201 dewatering pumps have been deployed in vulnerable zones to ensure timely evacuation during extreme rainfall.²⁵
- ✔ These measures are embedded within an integrated urban flood management approach, aligned with smart city planning, infrastructure upgrades, and monsoon action plans, with an emphasis on desilting, real-time monitoring, and interdepartmental coordination.²⁶

Factors Influencing the Issue

Demographic trends, including population growth, urbanisation, and changing consumption patterns, are driving increased water demand across all sectors. Legal and policy frameworks determine water allocation priorities, rights, and conservation requirements, often struggling to balance competing interests. Economic development trajectories, particularly industrial expansion and agricultural intensification, significantly impact water consumption patterns and sustainability. Technological factors, including irrigation efficiency, water treatment capabilities, and monitoring systems, present both challenges and opportunities for addressing scarcity. Environmental conditions, including climate change impacts, rainfall variability, and ecosystem health, directly affect water availability and quality, creating complex interdependencies that require integrated management approaches.

Impacts of the Issue

Direct Impact

- Limited access to safe drinking water and sanitation.
- Reduced availability for agriculture and industry.
- Environmental degradation from pollution.
- Disproportionate burden on marginalised communities.

Indirect Impact

- Increased waterborne diseases and public health infrastructure burden.
- Economic losses to farmers and water-dependent industries.
- Long-term ecological imbalances and sustainability challenges.
- Limited educational and economic opportunities, especially for women.

Global Learnings

Global Best Practice

Singapore – NEWater²⁷: Advanced Water Reuse for Urban Resilience: Singapore's NEWater initiative illustrates a comprehensive approach to water sustainability by recycling treated wastewater into ultra-clean, high-grade reclaimed water. Utilising a rigorous three-step purification process—microfiltration, reverse osmosis, and ultraviolet disinfection—NEWater meets and surpasses WHO standards for drinking water.

Disruptive Technologies - Decentralised Water Management Systems

Implementing decentralised water management systems, including rainwater harvesting, wastewater recycling, and smart water metering, can enhance water security and resilience to droughts and other water-related challenges. Australia's city of Adelaide has implemented decentralised stormwater harvesting systems, collecting rainwater for non-potable uses like irrigation and industrial processes, reducing strain on centralised water supplies.²⁸

Possible Pathways

Short-Term Pathway (2030)

Enhance Groundwater Replenishment and Source Sustainability

- Construct dedicated borewell recharge structures for every drinking water source, subject to land availability

Strengthen Industrial and Domestic Water Regulation

- Review and enforce stricter anti-pollution policies
- Enforce strict compliance with pollution control laws regarding industrial and sewage effluent discharge

Possible Pathways

Short-Term Pathway (2030)

Strengthen Water Governance and Coordination

- Constitute the Committee chaired by the Chief Minister for coordination as suggested by the Haryana Water Resources Authority
- Implement the Integrated Water Resources Plan with adjustments aligned to the Viksit Haryana Document timeframes
- Issue a Government Order to designate the State Water and Sanitation Mission, chaired by the Chief Secretary, as the state-level coordination platform (as per Jal Jeevan Mission [JJM] guidelines)
- Designate, through a Government Order, District Water and Sanitation Mission chaired by the District Magistrate/Collector/Deputy Commissioner as district level platform for coordination. This should include all Departments as per JJM guidelines
- Integrate Village Water & Sanitation Committees, Water User Associations, watershed committees, Atal Bhujal Yojana committees, and FPOs at GP, block, and district levels for local water decision-making

Develop Operations, Maintenance & Technology Policies

- Develop an Operation & Maintenance policy for rural/urban water supply, sanitation, resource assets, and micro-irrigation systems
- Establish a state-level committee, chaired by a Senior State Scientist, to empanel innovative technologies with departmental representation

Conduct Participatory Water Needs Assessment

- Identify gaps in water access and quality with community involvement

Formulate Water Conservation Policies

- Promote rainwater harvesting, drip irrigation, and blue-green infrastructure
- Launch targeted interventions for water table replenishment through managed aquifer recharge (MAR) techniques, check dams, recharge wells, and rejuvenation of traditional water bodies
- Map and prioritise regions affected by waterlogging and salinity, and initiate pilot interventions like subsurface drainage systems and salt-tolerant crop promotion
- Mandate rooftop rainwater harvesting systems in all government buildings and new urban housing projects in water-stressed districts like Mahendragarh, Bhiwani, and Rewari

Restore Traditional Water Infrastructure

- Undertake de-silting of minor irrigation canals using MGNREGS Natural Resource Management funds
- Rejuvenate water bodies owned by Gram and Block Panchayats
- Identify inlet channels to water bodies and initiate encroachment removal
- Restore inlet channels and water bodies maintained by the Water Resources/Irrigation Departments

Ensure Financial Support for Execution

- Leverage central/state grants and explore green bonds/credits

Invest in Water Research

- Increase the budget for innovative water treatment technologies

Short-Term Pathway (2030)

Modernise Monitoring and Infrastructure

- Install bulk-water metres at Gram Panchayat and town levels, and at entry points in major urban centres (1MLD+ supply)
- Test all drinking water sources for chemical and bacteriological contamination as per JJM and AMRUT standards
- Conduct leak detection in water supply pipelines and reduce treatment losses as per Central Public Health and Environmental Engineering Organisation (CPHEEO) standards
- Establish adequate National Accreditation Board for Testing and Calibration Laboratories (NABL)-accredited water quality testing labs as per JJM protocols

Mandate Water-Saving and Reuse Practices

- Complete rainwater harvesting systems in all public buildings
- Mandate micro-irrigation for sugarcane crops
- Reuse treated wastewater from Sewage Treatment Plants (STPs) for 25% of horticultural irrigation needs

Introduce Annual Incentives for PRIs/ULBs

- Recognise water conservation efforts through fiscal rewards

Train Farmer Collectives on Conservation

- Partner with CSOs and KVKs for grassroots training

Build PRI/ULB Capacity in Water Governance

- Complete the training of Nal Jal Mitras in every Gram Panchayat under JJM
- Develop training on Detailed Project Reports (DPRs), budgeting, and implementation processes

Long-Term Pathway (2047)

Modernise Irrigation and Improve Efficiency

- Build institutional capacity of ULBs/PRIs to access green bonds
- Ensure GPDPs and similar frameworks are adopted across ULBs
- Include water budgeting, greywater reuse, and recharge structure planning in every GPDP
- Integrate water conservation via continuous capacity building
- Modernise and restore irrigation canals (above minors), targeting a 20% increase in water-use efficiency as per the National Action Plan on Climate Change. Adopt piped irrigation networks.
- Achieve 50% micro-irrigation coverage in all over-exploited blocks. Promote regenerative agriculture and agri-voltaics in micro-irrigated areas to improve soil moisture retention and create additional carbon sinks while generating solar power.

Long-Term Pathway (2047)

Reallocate and Restore Critical Water Zones

- Restore 50% of water-logged areas
- Reallocate agricultural water savings for domestic and industrial use through the Haryana Water Resources Authority

Implement M&E for Inclusive Water Projects

- Track impact on access, usage, and community satisfaction

Digitise and Automate Water Management

- Develop GIS-based digital water networks for JJM and AMRUT schemes, using as-built drawings capturing asset details.
- Deploy IoT-based systems to manage rural and urban water supply networks.

Surface Water and Non-Conventional Water Sources

- Interlink minor rivers and canal networks to enhance surface water utilisation.
- Develop unconventional water resources (e.g., direct rainwater use, desalination in salinity-affected areas) for 25% of domestic water needs. Leverage treated greywater and surface runoff in peri-urban areas for recharge zones, integrating climate-resilient water reuse systems into urban and rural planning.

ISSUE 3: CLEAN ENVIRONMENT – WASTE MANAGEMENT, AIR

Haryana's rapid urbanisation presents significant environmental challenges, particularly in waste management and air quality. With the urban population growing exponentially, waste generation is projected to increase from 4,500 tonnes per day to over 7,500 tonnes by 2035.²⁹ This waste comes from diverse sources—households, commercial establishments, industries, and agricultural activities—each requiring tailored management approaches. Simultaneously, air pollution from vehicular emissions, industrial operations, agricultural practices like stubble burning, and thermal power plants has resulted in PM 2.5 concentrations 12.6 times higher than WHO guidelines, creating serious public health concerns and deteriorating quality of life.³⁰

In response, the State Government has introduced various initiatives to strengthen waste management and improve air quality. Key interventions include the State Solid Waste Management Policy, Solid Waste Environmental Excellence Protocol (SWEEP), and waste-to-energy and recycling infrastructure investments. Efforts to rejuvenate urban water bodies and control river pollution have also been prioritised. Haryana has expanded real-time monitoring on air quality, enforced action plans in high-risk districts, and scaled up measures to curb stubble burning and industrial emissions. The Haryana Clean Air Project, supported by multilateral agencies, represents a significant step in this direction.

While these initiatives reflect significant progress, the scale and complexity of environmental challenges demand sustained, coordinated, and community-driven action to secure a healthier urban future for the state.

Current Status

- ✓ 64.98% of wards have 100% source segregation³¹
- ✓ 94% of wards have 100% door-to-door waste collection³²
- ✓ 50% of Municipal Solid Waste processed of the total generated³³
- ✓ Urban areas generate 4,500 tonnes of waste per day (expected to reach 7,500 TPD by 2035)³⁴
- ✓ PM2.5 concentration exceeds WHO guidelines by 12.6 times³⁵
- ✓ **Solid waste infrastructure projects and digital governance mechanisms³⁶:**
 - **Infrastructure & Segregation:** SWM sheds are being constructed for storage & segregation of bio-degradable & non-bio-degradable waste in villages. As of today, 2558 SWM sheds have been constructed, with 4074 more planned for 2025-26 to meet the existing gap.
 - **Composting:** 43539 individual and 8720 community compost pits have been built to promote organic waste management.
 - **Collection & Transportation:** Door-to-door solid waste collection is managed by Gram Panchayats, supported by provided collection & transport vehicles. Procurement of 298 Hopper Tipper Dumpers for large Gram Panchayats is underway to enhance this.
 - **Decentralised Management:** The department plans to partner with Cluster Level Federations of SHGs under Haryana State Rural Livelihoods Mission (HSRLM) for comprehensive door-to-door collection, transportation, segregation, and disposal.
 - **Plastic Waste Management Units (PWMUs):** 08 PWMUs have been established at the block level for plastic recycling and sustainable disposal, with more planned.
 - **GOBAR-DHAN Projects:** 11 Model GOBAR-DHAN projects for safe cow dung disposal are complete at the district level, with six more under construction.
 - **IEC Activities:** Continuous IEC activities are conducted at district, block, and GP levels to encourage plastic waste reduction and reuse.
- ✓ **Waste-to-Energy Plants (Urban Focus):**
 - A 750 TPD Waste-to-Energy plant in Sonipat is operational, serving Sonipat, Panipat, Samalkha, and Gannaur, significantly reducing landfill pressure.
 - MoUs signed with NTPC for 1,500 TPD (Gurugram) and 1,200 TPD (Faridabad) torrefied charcoal-based Waste-to-Energy plants, converting high-calorific waste into renewable fuel.
 - **Digital Governance (Urban Focus):** A centralised SWM Monitoring Portal provides real-time tracking of collection, segregation, transportation, and processing at the ULB level, fostering data-driven governance.
 - **Compressed Biogas (CBG) Plants (Urban Focus):** Plans are in place to establish CBG plants in six municipal corporations in collaboration with GAIL to convert organic waste into bio-CNG.
 - **E-waste Management (Urban Focus):** Haryana plans to establish dedicated e-waste collection centres at Material Recovery Facilities (MRFs) across ULBs, coordinating with Haryana State Pollution Control Board (HSPCB) for authorised dismantlers and recyclers.
- ✓ **Liquid Waste Management:**
 - **Diverse Management Systems:** Liquid waste is managed through various methods including drainage networks, 3/5 ponds systems, Waste Stabilisation Pond (WSP), Constructed wetlands, Nahveen, Seechewal, and Community Soak pits.

- **Focus on Community Soak Pits:** The primary focus is now on cost-effective and easy-to-maintain Community Soak Pits.
- **Project Completion:** 2237 Liquid Waste Management projects (village-level solutions) have been constructed.
- **Soak Pit Construction:** 10999 Community Soak Pits and 28860 individual soak pits have been built.
- **Urban Sanitation Infrastructure (SBM-Urban):**
 - 415 Community Toilets (2,334 seats) and 1,429 Public Toilets (6,838 seats) are functional across ULBs.
 - 72 urinals (161 seats) developed in high-footfall areas.
 - 836 units are directly maintained by ULBs or partner agencies.
 - The Annual Implementation Plan 2025-26 targets 75,995 additional Individual Household Laterines (IHHL) (including PMAY-G beneficiaries), with 2,289 already completed this year.
 - Strategic placement in slum clusters, marketplaces, and transport hubs.
 - Ongoing efforts for retrofitting, digital monitoring, and improved access for vulnerable groups.

Sewage Treatment Plants (STPs) (Urban Focus):

- Currently, 10 STPs under ULB (Karnal, Sonipat, Panipat, Narnaul) with a combined capacity of 219 MLD and 146 MLD utilisation. Karnal, Sonipat, Panipat STPs are fully compliant. Narnaul STP is being operationalised.
- 33 STPs with a combined capacity of 391 MLD are under various stages of development across ULBs in Yamuna and Ghaggar catchments.
- Yamuna Catchment: 20 STPs (332.5 MLD) fully completed, with several transferred to Public Health Engineering Department (PHED).
- Ghaggar Catchment: 13 STPs (58.5 MLD) are in various stages, with 10 already 100% complete.

Factors Influencing the Issue

Regulatory policies and enforcement mechanisms significantly shape waste management practices and air quality standards, with effective implementation determining environmental outcomes. Economic considerations, including funding availability, market incentives, and investment priorities, influence waste treatment infrastructure development and pollution control technologies. Public awareness and community participation are critical determinants of waste segregation, recycling rates, and overall environmental stewardship. Technological advancements in waste processing, recycling, and air filtration offer opportunities for innovative solutions, while climate patterns and ecosystem resilience impact the environmental capacity to absorb pollution. These multifaceted factors interact in complex ways, necessitating comprehensive strategies that address environmental challenges from multiple angles simultaneously.

Impacts of the Issue

Direct Impact

- Poor air quality affecting residents' health.
- Limited access to clean water affecting sanitation.
- Agricultural productivity reduction from polluted sources.
- Improper waste disposal leading to disease vectors.

Indirect Impact

- Rising chronic diseases and outmigration to cleaner cities.
- Infectious disease spread and increased healthcare burden.
- Disruption to food security and rural livelihoods.
- Degradation of living conditions and economic vitality.

Global Learnings

Global Best Practice

Sweden – Integrated Waste-to-Energy Systems³⁷: Sweden has pioneered an integrated approach to waste management and air pollution control by converting non-recyclable waste into energy through advanced waste-to-energy (WtE) plants. These facilities not only reduce landfill use but also supply heat and electricity to urban areas via district heating networks.

Disruptive Technologies - Circular Economy and Waste Management Technologies

Adopting circular economy principles and leveraging advanced waste management technologies like recycling robots and waste-to-energy systems can minimise waste, conserve resources, and create economic opportunities within the region. The city of San Francisco, USA, has implemented comprehensive recycling and composting programmes, diverting a significant portion of waste from landfills and promoting a circular economy model.³⁸

Possible Pathways

Short-Term Pathway (2030)

Identify Gaps in Waste and Air Management

- Conduct a comprehensive needs assessment for waste and air quality

Strengthen Solid & Liquid Waste Management

- Implement SBM-Gramin for efficient waste systems
- Provide hopper tippers to Gram Panchayats with guidelines
- Assign SHGs for waste collection with structured wages

Implement Air Quality Policies and Monitoring

- Enforce the vehicle scrappage policy with incentives
- Expand air monitoring stations and use real-time industrial data

Enforce E-Waste Management Frameworks

- Develop and regulate an effective e-waste policy

Short-Term Pathway (2030)

Promote Green Transport & EV Adoption

- Incentivise electric vehicles and green public transport

Incorporate Pollution-Resilient Urban Infrastructure

- Integrate air quality considerations into urban planning by mandating built-in air purification systems and improved ventilation in all new public and private buildings. Retrofit existing infrastructure, especially in high-density urban areas, with air purification technologies to enhance indoor air quality

Enable Continuous Policy Review

- Form a high-level policy committee and stakeholder forums
- Conduct ongoing training for ULBs and enforcement bodies

Long-Term Pathway (2047)

Make Haryana a Zero-Waste State

- Mandate waste reduction, recycling, and sustainable disposal. Expand WtE initiatives across ULB clusters with torrefaction and Refuse-Derived Fuel (RDF) co-processing technologies to reduce landfill dependence and generate renewable industrial fuel.
- Offer financial incentives and run awareness campaigns

Adopt Circular Economy in Waste Systems

- Mandate EPR, promote industrial symbiosis
- Support innovation hubs for sustainable materials

Reduce PM2.5 by 60%

- Enforce clean tech adoption and emissions tracking
- Expand green buffer zones

Expand Health Education & Outreach

- Add NCD modules to school curricula
- Launch regular health screenings at workplaces
- Conduct monthly community health camps and public campaigns

Scale Carbon Capture Projects

- Incentivise industries and partner with research bodies
- Target high-emission clusters for carbon capture and storage (CCS) deployment, coupled with afforestation in adjoining zones to create industrial carbon sinks.
- Integrate pilot learnings into full deployment

Transition to 100% Green Energy

- Set regulatory and financial frameworks
- Strengthen renewable grid integration

ISSUE 4: LAST MILE REACHING THE MARGINALISED AND EXCLUDED

Despite Haryana's overall economic progress, significant sections of society remain excluded from the benefits of development, particularly minorities, elderly individuals, persons with disabilities, scheduled castes, and backwards classes. The state aims to empower these groups through economic self-reliance, equal opportunities, and social security measures. Still, persistent disparities in political representation, employment, safety, and housing indicate that considerable challenges remain.

In recent years, Haryana has introduced several initiatives to promote inclusion and social welfare. Notable among these are the provision of 50% reservation for women in PRIs, the establishment of Senior Citizen Service Centres, and dedicated support for street vendors through welfare schemes and livelihood opportunities. The state has also actively advanced women's education and empowerment initiatives under the national BBBP campaign, aimed at improving the child sex ratio and promoting girls' access to education and healthcare.

While these efforts mark meaningful progress towards building an inclusive and equitable society, substantial gaps persist. Bridging these disparities calls for sustained, targeted interventions that address both systemic barriers and immediate socioeconomic needs, ensuring marginalised communities can fully participate in and benefit from Haryana's development trajectory.

Current Status

- ✔ Only 10% of Lok Sabha seats won by women candidates³⁹
- ✔ 18.89% of state legislative assembly seats reserved for SC/ST candidates⁴⁰
- ✔ Transgender to male labour force participation ratio: only 0.67⁴¹
- ✔ 21.2 crimes against SCs per 100,000 SC population⁴²
- ✔ 0.2% of households living in kutcha houses⁴³

Factors Influencing the Issue

Policy design and implementation directly impact the prioritisation and effectiveness of inclusion initiatives, with resource allocation decisions determining which communities receive attention and support. Financial constraints often limit programme scope and sustainability, while prevailing social norms and education levels shape attitudes toward marginalised groups and their own agency. Digital divides can either facilitate or hinder service delivery to excluded populations, with access barriers particularly affecting rural and economically disadvantaged communities. These factors operate within complex legal frameworks governing equality, affirmative action, and social protection, collectively determining whether marginalised communities can access development opportunities and essential services.

Impacts of the Issue

| Direct Impact | Indirect Impact |
|--|---|
| <ul style="list-style-type: none"> • Improved access to essential services and opportunities. • Promotion of social inclusion. • Increased resources for marginalised populations. • Improper waste disposal leading to disease vectors. | <ul style="list-style-type: none"> • Enhanced well-being and reduced disparities. • More equitable and inclusive society. • Economic contributions from previously excluded groups. • Degradation of living conditions and economic vitality. |

Global Learnings

Global Best Practice

Rwanda’s Drone-Powered Leap in Last-Mile

Inclusion⁴⁴: Rwanda has transformed the challenge of reaching its most remote and marginalised communities by embracing cutting-edge drone technology. These agile drones soar over rugged terrain and poor roads to deliver essential medicines, vaccines, and diagnostic samples with unprecedented speed and precision. This innovative approach bridges critical gaps in healthcare access, ensuring that no village is too distant or underserved. Coupled with strong community engagement, Rwanda’s drone programme exemplifies how technology can dismantle physical barriers and accelerate equitable service delivery.

Disruptive Technologies - Solar-Powered AI Telehealth Kiosks for Last-Mile Healthcare Access

Deploying solar-powered community telehealth kiosks equipped with diagnostic tools and AI support can bridge the healthcare access gap in remote and underserved regions. These kiosks provide basic medical consultations, diagnostics, and referral services without requiring full-time doctors on site. India Health Link’s iCare clinics are pioneering such models, enabling last-mile populations to access preventive care, chronic disease management, and digital health records—often with the help of local health workers. These solutions reduce dependency on overburdened urban healthcare systems and ensure inclusive, tech-enabled healthcare delivery.⁴⁵

Possible Pathways

Short-Term Pathway (2030)

Mandate Participatory Governance

- Review PRI/ULB laws to ensure ward committees, area sabhas
- Ensure inclusion of the elderly, disabled, women, SC/ST, and minorities. Promote schemes like “Incentive to Village Panchayats for their Outstanding Work,” which awards INR 50,000 to local innovation and inclusion
- Panchayats that carry out innovative welfare initiatives for Scs, encouraging local innovation and inclusion

Make Development Plans Inclusive

- Amend the master/development plan policies for inclusivity mandates

Inclusion Review in Gram Sabha Meetings

- In every Gram Sabha 5.0 session introduce an “Inclusion Review”—a structured assessment of schools, Anganwadis, health centres, and welfare schemes for persons with disabilities. This mechanism will help capture real-time community feedback, align local priorities with Mission Antyodaya and GPDP, and institutionalise inclusion as a core element of local governance

Assess Equity-Oriented Policies

- Review outcomes of budgets/laws for women, SC/ST, and the disabled
- Focus on tangible impact, not just allocations

Short-Term Pathway (2030)

• **Enforce E-Waste Management Frameworks**

- Develop and regulate an effective e-waste policy

Bridge Digital Divide

- Formulate targeted digital access policies for marginalised

Institutionalise Policy Dialogue

- Create stakeholder forums for inclusive governance inputs

Expand Vocational Training Access

- Leverage centrally sponsored schemes such as Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY) to provide targeted skill development training to SC communities
- Promote educational schemes, including scholarships and hostel facilities for SC/BC students, to improve literacy, skill acquisition, and employment opportunities
- Partner with local institutions to skill marginalised groups

Inclusion Cells at District level

- Establish Gender & Disability Inclusion Cells in select Zila Parishads such as Nuh, Sirsa, and Bhiwani to strengthen social and disability inclusion at the grassroots. These cells would serve as dedicated platforms to track local challenges, support inclusive planning, and ensure effective utilisation of funds from District CAPEX Plans and State Finance Commission Grants for accessibility and gender-focused initiatives

Enable Mentorship and Funding

- Partner with CSRs/philanthropies to support youth

Build Sensitisation Capacity

- Design training for local bodies on the needs of marginalised groups

Enhancing Pedestrian Safety and Accessible Urban Walkways

- District-level pedestrian infrastructure audits to prioritise accessible, Indian Roads Congress (IRC)-compliant footpath upgrades,
- Community-led footpath maintenance committees supported by digital grievance platforms,
- Adoption of smart crossings with AI-enabled lighting and sensors for safer pedestrian movement and
- Culturally tailored behavioural change campaigns to promote awareness of pedestrian rights and safe practices

Enhance Citizen-Centric Service Delivery

- Establish Citizen Experience Platforms (CXP) to unify key services (land, health, education, licenses, etc.) under one seamless digital interface, ensuring accessibility and convenience for all residents

Promote Social Equity and Harmony

- Ensure effective implementation of the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 by providing timely financial assistance and legal support to SC/ST victims of violence or discrimination
- Strengthen schemes like Mukhyamantri Vivah Shagun Yojna and Mukhya Mantri Samajik Samrasta Antarjatiya Vivah Shagun Yojna to promote inter-caste harmony and social cohesion by offering financial incentives for intercaste marriages

Launch Rights-Based Awareness Campaigns

- Educate communities on legal rights and entitlements

Long-Term Pathway (2047)

Institutionalise Participatory Governance Structures

- Scale up ward committees and area sabhas across all PRIs and ULBs campaigns
- Mainstream Participatory Budgeting
- Establish a real-time, AI-powered citizen engagement platform that empowers every Indian to participate directly in governance, policy feedback, grievance redressal, and development planning following objectives, thus enabling a truly participatory democracy by 2047 with the following objectives:
 - Enable two-way communication between citizens and government authorities
 - Streamline grievance redressal with speed and accountability
 - Strengthen trust between citizens and government institutions

Expand Participatory Budgeting in all Local Bodies with CSO Support

- Mandate budget creation through participatory processes

Embed Mobile Service Delivery Models

- Institutionalise mobile services in health, education, and welfare systems

Protect Digital Rights & Inclusion

- Advocate for inclusive digital policies addressing access, affordability, and relevance

Expand Strategic Partnerships

- Scale up partnerships with diverse actors for sustained local reforms

Ensure Transparency with Blockchain-Enabled Systems

- Introduce blockchain audit trails for land records, welfare schemes, and financial transactions to ensure traceability, reduce fraud, and eliminate physical submissions—taking cues from Telangana’s Blockchain District

ISSUE 5: STRENGTHENING LOCAL SELF-GOVERNMENT

Effective local self-governance is fundamental to creating livable, sustainable communities that respond to citizens' needs. In Haryana, significant efforts have been made to empower grassroots institutions through inclusive dialogue, capacity-building, and awareness campaigns. While progress is evident in gender representation and fiscal management, local governance still faces substantial challenges, including limited financial autonomy, capacity gaps among elected officials, procedural delays in project approvals, and persistent social inequalities that restrict participation. Addressing these barriers is essential for realising the full potential of decentralised governance and ensuring that local institutions can effectively drive development that reflects community priorities.

Current Status⁴⁶

- ✔ 6,201 elected Sarpanches (3,020 females, 3,181 males)
- ✔ 59,725 elected Panches (28,055 females, 31,670 males)
- ✔ Gender inclusivity in local governance with balanced representation
- ✔ Reservations implemented: 9,051 SC females, 9,477 SC males, 12,135 General females, and 13,857 General males elected
- ✔ Municipal bodies: INR 4,76,804 lakhs income and INR 2,71,787 lakhs expenditure (2020-21)

Factors Influencing the Issue

Governance structures determine the balance of power between different administrative levels, with decentralisation effectiveness varying based on institutional design and implementation. Resource distribution significantly impacts local bodies' capacity to address regional development disparities, with financial autonomy being a critical determinant of decision-making authority. Community engagement levels, demographic diversity, and social cohesion influence participation in and responsiveness of local governance, especially for marginalised groups. Environmental considerations increasingly shape local governance priorities, with climate resilience and sustainability becoming central to planning processes. These dynamics operate within legal frameworks that define local bodies' powers, responsibilities, and relationships with higher governance tiers, creating complex institutional environments that require strategic reform approaches.

Impacts of the Issue

Direct Impact

- Greater authority and autonomy in decision-making.
- Responsive local governance addressing community needs.

Indirect Impact

- Increased accountability and transparency in resource use.
- Improved service delivery and community living standards.

Global Learnings

Global Best Practice

Kerala's People's Plan Campaign⁴⁷: Kerala's People's Plan Campaign stands as a visionary model of participatory planning through PRIs, where local communities actively shape their development priorities. Piloted in villages such as those in Kottayam district and places like Vellanikkara in Thrissur district, citizens participate in grama sabhas (village assemblies) to identify needs, propose projects, and allocate resources. Kerala has demonstrated how deep democratic decentralisation can lead to inclusive, transparent, and accountable governance. This approach inspires the creation of empowered local governments that truly reflect and respond to the aspirations of their people, fostering equitable growth and sustainable development at the grassroots.

Disruptive Technologies - AI for Decision Making

AI can analyse vast amounts of data to provide insights for better decision-making in urban planning, resource allocation, and public service delivery. Predictive analytics can help anticipate and mitigate various challenges, such as traffic congestion or resource shortages. The city of Helsinki, Finland, utilises AI algorithms to optimise public transportation routes and schedules based on real-time data, improving efficiency and reducing congestion.⁴⁸

Possible Pathways

Short-Term Pathway (2030)

Enhance Financial Independence for Local Governments

- Increase fund transfers to Panchayats and ULBs and ensure predictability in timing and quantum of grants
- Rationalise property tax to augment own sources of revenue for the ULBs
- Implement PPPs, local municipal bonds, and self-sustaining business models

Strengthen Governance and Capacity Building

- Provide training for elected representatives on governance and service delivery
- Amend policies for local autonomy and create a Local Governance Index
- Grant legislative powers to local bodies and mandate social audits

Streamline Project Approvals and Regional Development

- Digitise approval processes and reduce bureaucratic delays
- Develop integrated governance for peri-urban areas and improve resource-sharing

Foster Sustainable Infrastructure and Innovation in Local Administration

- Implement climate-resilient infrastructure and e-governance for service delivery
- Promote gender and caste inclusion, strengthen women's leadership
- Introduce citizen-led planning and expand social accountability
- Install interactive digital feedback kiosks in public offices, schools, and health centres where citizens can instantly rate services and provide suggestions (like public dashboards in Dubai)

Long-Term Pathway (2047)

Promote Public-Private Partnerships (PPPs)

- Introduce local municipal bonds and promote self-sustaining business models for local governments
- Grant legislative powers to local bodies
- Institutionalise participatory governance and mandate social audits for accountability

Amend Policies for Greater Local Autonomy

- Create a Local Governance Index and establish an independent governance audit body

Implement Climate-Resilient Infrastructure

- Adopt e-governance for efficient service delivery and create knowledge-sharing platforms for best practices

Develop Integrated Governance Models for Peri-Urban Areas

- Improve regional resource-sharing and promote balanced urbanisation

Align Governance with SDGs

- Integrate sustainability indicators into policy frameworks and foster innovation in local administration

Encourage Citizen-Led Local Development Planning

- Expand social accountability mechanisms and establish local governance forums

ISSUE 6: UNPLANNED GROWTH AND URBAN MIGRATION

Haryana's urbanisation rate increased from 10.77% in 1911⁴⁹ to 34.88% in 2011⁵⁰, exceeding the national average and reflecting significant demographic and spatial transformation. This figure has further risen to 37% in 2024.⁵¹ This demographic shift has driven the expansion of the manufacturing, services, and knowledge economies, generating new socioeconomic opportunities while presenting challenges for existing governance and infrastructure systems. Rapid urban growth, particularly concentrated in the NCR, has outpaced infrastructure development, resulting in overcrowding, inadequate housing, traffic congestion, environmental degradation, and pressure on public services.

Haryana's Vision 2047 articulates a commitment to building prosperous, inclusive, and resilient cities, guided by sustainability, equity, innovative governance, and participatory planning principles. This vision emphasizes the implementation of balanced development strategies across the state, including significant improvements in infrastructure within lagging districts and the creation of diverse employment opportunities beyond the current NCR corridor. Strengthening rural-urban linkages and promoting balanced development in peri-urban areas, smaller towns, and Mahagams—large, modern village clusters—will be essential to mitigate the growing pressure on the NCR and encourage distributed economic growth.

Integrating climate resilience measures—including mitigating urban heat island effects, water-sensitive urban design, and low-carbon mobility solutions—will be critical to ensuring sustainable urban development. Leveraging smart digital infrastructure, such as GIS, IoT, and integrated data platforms, will enable real-time, evidence-based planning and improve service delivery outcomes.

Further, prioritising affordable housing, upgrading informal settlements, and advancing community-led, inclusive planning processes will be key to fostering social equity. The Housing for All Department will play a central role in addressing urban housing needs through innovative models such as rental housing for migrant workers and economically weaker sections. Innovative financing mechanisms, including public-private partnerships, municipal bonds, and multilateral funding, will be indispensable for addressing investment gaps and realising the state's long-term urban development objectives.

These interconnected priorities underscore the imperative for comprehensive, future-ready urban planning frameworks harmonising growth with sustainability, resilience, and social inclusion.

Current Status

- ✔ Urbanisation increased from 10.77% (1911)⁵² to 34.88% (2011)⁵³
- ✔ Urban areas struggling with inadequate infrastructure and housing
- ✔ Increased private vehicles leading to congestion and pollution
- ✔ Water scarcity exacerbated by growing demand

Factors Influencing the Issue

Governance effectiveness significantly impacts urban development patterns, with planning capacity and regulatory enforcement determining whether growth occurs in systematic or haphazard ways. Economic

disparities between rural and urban areas drive migration patterns, while job market dynamics shape settlement concentration and labour force distribution. Demographic shifts, including population growth, household size changes, and ageing trends, influence housing demand and service requirements. Environmental pressures such as resource depletion and climate vulnerability affect urban sustainability and resilience, creating complex feedback loops with development decisions. These factors operate within legal frameworks governing land use, property rights, and development controls, collectively shaping the urban landscape and determining whether growth enhances or diminishes the quality of life for residents.

Impacts of the Issue

Direct Impact

- Unplanned and haphazard city growth patterns.
- Urban sprawl, congestion, and overcrowding.
- Inadequate provision and planning of public spaces.
- Poorly planned and disconnected street networks.
- Deteriorating, high-density old city areas requiring retrofitting.
- Rising traffic congestion and mobility bottlenecks.
- Increased frequency of urban flooding and water scarcity.
- Intensification of urban heat island effects.
- Environmental degradation from pollution.
- SWM challenges.
- Unemployment and informal employment.

Indirect Impact

- Rapidly expanding urban footprint without rural-urban integration.
- Increased exposure to disaster risks due to inadequate risk-informed planning.
- Land value fluctuations and competition over limited resources.
- Public health deterioration and disruption of livelihoods.
- Social instability and limited human capital development opportunities.
- Health challenges and declining tourism potential.
- Neglect and deterioration of urban heritage structures.

Global Learnings

Global Best Practice

Curitiba's Transit-Oriented Development⁵⁴:

Curitiba, Brazil, has been internationally recognised for its innovative approach to urban planning, particularly through its implementation of transit-oriented development (TOD). The city's master plan strategically directed urban growth along dedicated bus rapid transit (BRT) corridors, integrating land use and transportation planning. This approach facilitated high-density

Disruptive Technologies - IoT for Smart Infrastructure

IoT devices can be deployed in various infrastructure components such as transportation, energy, and waste management to optimise resource usage, reduce costs, and improve service delivery. For example, smart metres can monitor and manage energy consumption efficiently. Singapore has implemented an extensive IoT network for various purposes, including smart transportation with sensors on buses and traffic

development near transit routes, reducing urban sprawl and promoting efficient public transportation usage.

lights to optimise traffic flow and smart waste management with sensors in trash bins to optimise waste collection routes.⁵⁵

Possible Pathways

Short-Term Pathway (2030)

Facilitate Sister-City Agreements

- Foster urban innovation, academic exchange, and smart governance through strategic partnerships—e.g., Gurugram–Dubai (Tech), Hisar–Haifa (Agriculture), Panchkula–Melbourne (Urban Planning), Sonapat–Nizhny Novgorod (Education)

Revise and Enforce Urban Planning Regulations

- Mandate regular Master Plan updates with stricter zoning and land-use norms, integrating multi-scalar planning approaches (inspired by **Kuala Lumpur**)
- Digitise land records for transparent, accessible urban governance
- Promote spatial planning tools like digital GIS-based models for real-time urban data management

Launch Targeted Affordable Housing Programmes

- Provide financial incentives for low-cost, inclusive, climate-resilient housing projects
- Streamline approval processes for affordable housing
- Enforce slum redevelopment and rehabilitation policies with clear, time-bound targets
- Incorporate successful models from **Odisha and Gujarat's** housing initiatives

Initiate Urban Rejuvenation and Retrofitting Projects

- Revamp and densify old city areas, leveraging London Docklands' revitalisation model

- Incentivise mixed-use, transit-oriented developments (**Japan's** transit corridor densification model)

Strengthen Urban and Rural Mobility and Transport Infrastructure

- Expand public transport fleets and develop new metro corridors in high-density areas
- Launch state-subsidised last-mile services using e-rickshaws and shared mobility models (drawing from **Jakarta and European** urban mobility practices)
- Prioritise walkable, pedestrian-friendly street design (as in Amsterdam) in the core city and neighbourhood areas
- Ensure all rural habitations are connected by all-weather roads and promote the adoption of EVs to enhance sustainable rural mobility

Improve Water Security and Disaster Preparedness

- Mandate rainwater harvesting in all new developments
- Rehabilitate water bodies for flood control and recharge
- Deploy IoT-based groundwater monitoring systems
- Begin sponge city-inspired projects for stormwater management (**Singapore and China**)
- Launch passive cooling, tree cover expansion, and shaded public space initiatives to counter the urban heat island effect

Short-Term Pathway (2030)

Expand Healthcare and Sanitation Infrastructure

- Establish mobile health clinics in underserved urban areas
- Ensure universal access to sanitation and clean drinking water
- Launch targeted vaccination and health awareness programmes

Create Employment Hubs in Peri-Urban Areas

- Establish job hubs in emerging peri-urban growth zones

- Encourage SMEs, logistics parks, and agro-processing units as decentralised employment sources

Enhance Recreational Spaces and Urban Commons

- Develop public parks, waterfronts, and community plazas as economic and cultural hubs (following **South Korea's** recreational urban space model)

Long-Term Pathway (2047)

Integrate AI and Predictive Modelling in Urban Planning

- Adopt AI-driven digital twin modelling for infrastructure planning, disaster risk reduction, and resource optimisation (**Singapore's** digital twin model)
- Use AI-based systems for traffic management, waste logistics, and urban sprawl control

Ensure Universal Climate-Resilient Housing

- Mandate green, climate-adaptive housing in all new urban expansions
- Provide mortgage assistance for low-income and marginalised groups
- Encourage passive cooling designs, energy-efficient construction, and net-zero residential clusters

Achieve Zero Waste, Circular Cities

- Deploy AI-powered waste tracking and decentralised processing hubs
- Enforce strict EPR on manufacturers and large waste generators

- Promote recycling, composting, and reuse economies

Build Blue-Green Infrastructure for Climate Resilience

- Develop integrated blue-green networks for flood resilience, urban cooling, and biodiversity (inspired by China, Rotterdam, and Singapore)
- Promote household- and city-level energy audits, urban farming, and permeable street design

Strengthen Water Resilience and Smart Distribution

- Integrate AI-driven water distribution systems and predictive leak detection
- Ensure universal water metering and 100% treated wastewater reuse in industries and urban agriculture

Promote Resilient, Inclusive Urban Economies

- Launch AI-based job-matching and upskilling platforms
- Incentivise automation-focused vocational training

Long-Term Pathway (2047)

- Formalise and support a sustainable gig economy model, inclusive of women and marginalised workers.
- Integrate safety, accessibility, and inclusivity features for women and children in public transport, streets, and community spaces.

Prioritise Child- and Women-Friendly Urban Design

- Mandate gender-sensitive urban audits and inclusive planning processes.

BIG ACTIONS

1. Future-First Growth Zones

Haryana will establish high-impact Regional Acceleration Hubs in underserved districts—powered by advanced infrastructure, AI-driven governance, and industry-specific innovation clusters—unlocking new engines of inclusive prosperity and dismantling the geography of inequality.

2. Gram Sabha 5.0

A paradigm shift in local governance: Haryana will embed digital democracy, fiscal power, and participatory planning into every Panchayat and Urban Local Body. Backed by real-time data systems and performance-linked financing, grassroots institutions will emerge as autonomous transformation architects.

3. EquiLead

A bold state-led revolution to embed gender equity at the core of economic transformation. EquiLead mandates 50% women’s participation across all new industrial corridors, powered by AI-integrated skill hubs, equity-linked financing for women-led enterprises, and gender-intelligent infrastructure, positioning Haryana as a national model where inclusive growth is non-negotiable.

WORKING GROUP - 6

Departments

1. Development and Panchayats Department

2. Rural Development Department

3. Urban Local Bodies

4. Public Health Engineering Department

5. Social Justice, Empowerment, Welfare of Scheduled Caste & Backward Classes, and Antyodaya (SEWA)

6. Swarna Jayanti Haryana Institute for Fiscal Management

Timeline

24/07/2023



27/09/2023



05/10/2023



13/12/2023



25/01/2024



Introductory Presentation and Workshop on Strategic Foresight Approach
Haryana Civil Secretariat, Chandigarh

Meeting with the Member Secretary at Directorate of Urban Local Bodies, Panchkula

First Meeting of the Working Group at Paryatan Bhawan Building, Sector 2, Panchkula

Second Meeting of the Working Group at Directorate of Urban Local Bodies, Panchkula

Strategic Foresight Workshop at Hotel Mountview



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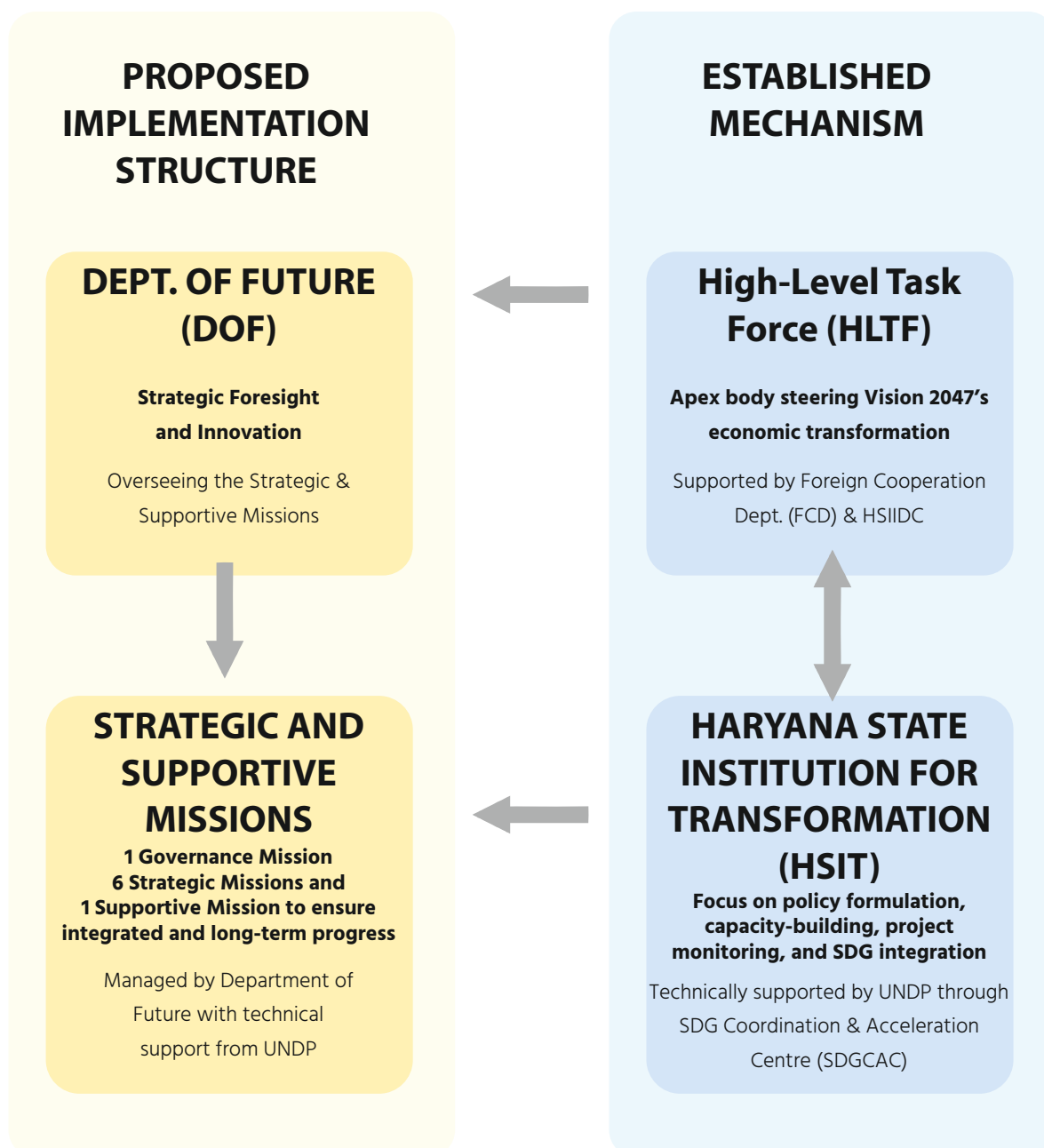
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HARYANA VISION IMPLEMENTATION PLAN

Haryana's Vision 2047 is anchored in a forward-looking governance architecture that combines strategic foresight, institutional innovation, and grounded execution. At the core of this framework is the newly established Department of Future (DoF) — a pioneering initiative positioning Haryana as the first Indian state to institutionalise anticipatory governance. The DoF will steer long-term transformation by embedding futures thinking, technology foresight, and scenario planning into the policy ecosystem, while providing strategic oversight to seven cross-sectoral Strategic Missions aligned with the Vision 2047 roadmap.

Simultaneously, the implementation of Vision will leverage institutional mechanisms, including the High-Level Task Force (HLTF) for strategic leadership, and the Haryana State Institution for Transformation (HSIT) as the nodal think tank and data analytics body, operating through the Swarna Jayanti Haryana Institute for Fiscal Management (SJHIFM). The SDG Coordination and Acceleration Centre (SDGCAC) will support technical convergence and SDG alignment across departments. This integrated governance ecosystem—guided by the Finance & Planning Department—ensures that Vision 2047 is executed in a systematic, evidence-based, and future-ready manner, blending global best practices with localised innovation for sustained, inclusive development.



01. Governance and Institutional Mechanism

Effective governance is the foundation of Vision 2047's implementation. Haryana is adopting a forward-looking and integrated governance model that combines strategic foresight, robust execution, and inclusive development. The institutional framework comprises visionary leadership bodies, high-powered task forces, agile implementation missions, and dedicated foresight units, all supported by technical expertise and multi-stakeholder coordination.

Department of Future

At the heart of this architecture is the DoF—India's first institutionalised anticipatory governance body at the state level. Positioned as a parallel and complementary entity to the HLTF, the DoF acts as the foresight and innovation engine for Haryana Vision 2047. It is entrusted with the critical role of mainstreaming futures thinking, technological foresight, and strategic risk anticipation across all sectors and departments.

Key mandates of the DoF include:

- Providing horizon scanning, trend analysis, and scenario planning inputs for major state initiatives.
- Ensuring that Strategic and Supportive Missions are aligned with emerging global and national challenges (e.g., climate change, AI, demographic shifts).
- Anchoring the AAA Governance Framework (Anticipatory, Adaptable, Agile) to enhance government responsiveness and preparedness.
- Running a Policy Innovation Lab, integrating agile and experimental policy prototyping.
- Working through departmental Foresight Champions to foster a whole-of-government futures culture.

DoF is supported by a hybrid staffing model combining senior IAS officers, domain experts (in AI, climate, economics, etc.), and institutional knowledge support from HSIT. It also serves as a technical partner to departments for integrating Future Impact Assessments into their planning.

High-Level Task Force

The HLTF for Mission Haryana-2047 serves as the strategic apex body steering the state's economic transformation and policy oversight. HLTF provides high-level accountability and political backing, reporting directly to the Hon'ble Chief Minister of Haryana.

Composition of HLTF: The HLTF comprises prominent members from diverse sectors, including industry, public policy, investment, and strategic planning. This multi-stakeholder composition ensures a comprehensive and balanced approach to development. The members bring rich experience from both national and international platforms, contributing to the mission's long-term goals with thought leadership and sectoral expertise.

HLTF will formulate five-year milestone-based strategies to accelerate industrial, service, and agricultural growth, enhance ease of doing business, attract global investments, and drive urbanisation and regional connectivity. Prioritising human capital development, it will promote education, skill-building, and greater workforce participation, especially among women. Additionally, the HLTF will assess institutional capacities, recommending governance enhancements for efficient policy execution. Supported by the Foreign Cooperation Department (FCD) and financially supported by HSIIDC, it will convene biannually to track progress and ensure active decision-making, advancing Haryana's trillion dollar plus economy vision by 2047. HLTF and DoF operate in close synergy—the DoF provides strategic foresight and analytical inputs while the HLTF ensures political anchoring and strategic resource allocation.

Missions (Managed by DoF)

To translate the strategic directives of the HLTF and foresight insights from the DoF into actionable reforms, the implementation framework of Vision 2047 is organised into one Governance Mission, six Strategic Missions, and one Supportive Mission.

Governance Mission: Future-Ready Governance—The AAA Approach

In an era marked by climate volatility, AI-driven disruptions, demographic transitions, and unforeseen global crises, governance must evolve beyond reactive measures. The Governance Mission focuses on building a Future-Ready Governance model guided by the AAA Framework—Anticipatory, Adaptable, and Agile. This mission, led by the DoF, is designed to ensure that the state anticipates long-term risks, adapts institutional frameworks accordingly, and responds swiftly to emerging challenges. It represents a paradigm shift: from short-term forecasting to long-term foresight, resilience, and innovation in public administration.

Strategic Missions: Sectoral Drivers of Vision 2047

Complementing the overarching Governance Mission are six Strategic Missions, each functioning as an implementation engine within a specific domain. These missions operate as cross-sectoral task teams led by Additional Chief Secretaries and bring together key departmental leaders and technical experts. Their responsibilities include:

- Translating vision-level foresight into sectoral action plans.
- Identifying and executing transformative projects.
- Driving convergence and resolving inter-departmental bottlenecks.

Each Strategic Mission is closely aligned with the priorities of Vision 2047 and receives continuous analytical support and future-oriented guidance from the DoF.

| STRATEGIC MISSIONS | ALIGNED DEPARTMENTS |
|---|---|
| STRATEGIC MISSION 1: Future-Prepared Human Settlements | Forests, Environment, Renewable Energy, Industries & Commerce, Agriculture, Horticulture, Animal Husbandry, Fisheries, Cooperation, Food & Supplies |
| STRATEGIC MISSION 2: Future-Resilient Finance and Security | Finance, Planning, Home, Revenue & Disaster, Training |

| | |
|---|---|
| STRATEGIC MISSION 3: Future-Envisioned Industrialisation | Industries & Commerce, MSME, Transport, Civil Aviation, Electronics & Information Technology, Power and Renewable Energy, Science & Technology, Buildings & Roads, Irrigation |
| STRATEGIC MISSION 4: Future-Secure Agriculture and Food | Agriculture, Horticulture, Animal Husbandry, Fisheries, Forests, Environment, Cooperation, Food & Supplies |
| STRATEGIC MISSION 5: Future-Focused Education and Skills | Primary, Secondary, Higher and Technical Education, Skill Development, MSME, Industries, Science and Technology, Employment, Labour, Welfare of SCs/BCs, Social Justice & Empowerment |
| STRATEGIC MISSION 6: Future-Ensured Families | Health & Family Welfare, Medical Education & Research, Public Health Engineering, Rural Development, Revenue & Disaster, Development & Panchayats, Rural Development, Urban Local Bodies, Women & Child Development, Social Justice & Empowerment, Welfare of SCs/BCs |

Haryana State Institution for Transforming

The SJHIFM, designated as the HSIT under the State Support Mission, serves as a pivotal advisory and strategic body modelled after the NITI Aayog. HSIT engages in policy formulation, data analysis, capacity-building, project monitoring, resource mobilisation, and advising the government on integrating SDGs and advancing the India@2047 vision. Governed by a high-level committee chaired by the Hon'ble Chief Minister and comprising senior bureaucrats and UNDP representatives, HSIT bridges policy planning and ground-level implementation to position Haryana as a model of transformative governance.

Composition of HSIT

| S.No. | Title | Role |
|-------|---|---------------|
| 1. | Chief Minister, Haryana | Chairman |
| 2. | Finance Minister, Haryana | Vice-Chairman |
| 3. | Chief Secretary to Government, Haryana | President |
| 4. | Additional Chief Secretary to Government, Haryana, Revenue & Disaster Management and Consolidation Department | Member |
| 5. | Additional Chief Secretary to Government, Haryana, Home, Jails, Criminal Investigation Department | Member |
| 6. | Additional Chief Secretary/Principal Secretary to Government, Haryana, School Education Department | Member |
| 7. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Finance & Planning Department | Member |

| | | |
|------------|---|--------|
| 8. | Additional Chief Secretary/Principal Secretary to Government, Haryana, PWD (B&R) Department | Member |
| 9. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Industries & Commerce Department | Member |
| 10. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Information Technology, Electronics & Communication Department | Member |
| 11. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Development & Panchayats Department | Member |
| 12. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Health & Family Welfare Department | Member |
| 13. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Town & Country Planning and Urban Estates Department | Member |
| 14. | Additional Chief Secretary/Principal Secretary to Government, Haryana, Youth Empowerment & Entrepreneurship Department | Member |
| 15. | Additional Chief Secretary/Principal Secretary/Commissioner & Secretary to Government, Haryana, Urban Local Bodies Department | Member |
| 16. | Secretary/Special Secretary, Finance Department, Haryana (looking after State Budget and Fiscal Management Cell) | Member |

SDG Coordination and Acceleration Centre

To provide technical support and ensure alignment with global goals, Haryana has established an SDG Coordination and Acceleration Centre (SDGCAC) under the aegis of HSIT (SJHIFM). This is a dedicated coordination hub that integrates together the Vision 2047 efforts with the SDGs. The SDGCAC will provide technical and analytical support to HSIT (SJHIFM), HLTF, and Strategic & Supportive Missions. It will work across all departments ('whole-of-government' approach) bringing multi-stakeholder expertise to address interlinked challenges.

UNDP's Advisory Role

The United Nations Development Programme (UNDP) is envisioned to serve as a key technical advisor and knowledge partner in Haryana's Vision 2047 journey. UNDP brings international experience in implementing Agenda 2030 and expertise in innovative governance practices. The AAA governance model itself is derived from UNDP's governance innovation concepts, and UNDP can help operationalise this by training officials in anticipatory planning and agile project management. As an external advisor, it can lend objectivity – benchmarking Haryana's progress against other regions or global indices and suggesting course corrections.

02. Phased Implementation Approach

Implementing Haryana's Vision 2047 is envisaged as a phased journey. Rather than attempting everything at once, the state will roll out the Vision in well-planned stages – short, medium, and long term – each with specific objectives and milestones. This phased approach allows for learning and course-correction along the way, building momentum from initial early successes to full-scale programmes. It also aligns with external timelines like the SDG 2030 deadline, ensuring synergy between medium-term goals and global commitments. Below is an outline of the two main phases of implementation:

Phased Implementation Timeline for Haryana Vision 2047

| Phase & Timeframe | Key Focus Areas |
|-------------------------------|--|
| Short-Term (2025–2030) | <p><u>Institutional Setup:</u> Establish the DoF, streamline the HLT and seven Strategic Missions, and launch the SDG Coordination & Acceleration Centre.</p> <p><u>Baseline Mapping:</u> Complete baseline mapping in all mission areas to set benchmarks. <u>Pilot Projects:</u> Implement pilot initiatives for each strategic mission to test innovative solutions on a small scale. <u>Initial Focus:</u> Enact early reforms or projects that show visible results to build public confidence. <u>Capacity Building:</u> Train a team of officials in AAA governance practices and familiarise them with the Vision 2047 targets.</p> |
| Long-Term (2030–2047) | <p><u>Full Implementation & Continuity:</u> All Vision 2047 initiatives are fully implemented and integrated into normal governance.</p> <p><u>Adaptive Policy:</u> Periodically update and introduce new policies as needed to respond to changes (technological advances, demographic shifts, climate impacts). The DoF spearheads foresight exercises every few years to adjust the roadmap. <u>Technology & Innovation:</u> Embrace emerging technologies to further boost development programmes.</p> |

03. Review and Monitoring Structure

A robust review and monitoring framework is critical to translating Vision 2047 from an aspirational roadmap into a results-driven, adaptive governance journey. The framework integrates anticipatory foresight, data-backed decision-making, and public accountability into a cohesive review mechanism. It enables early identification of bottlenecks, real-time course corrections, and transparent reporting, aligned with the AAA governance model – Anticipatory, Adaptable, and Agile.

Annual Strategic Reviews (Led by HLTF with Inputs from DoF)

The HLTF will convene annual strategic reviews around the state's budget cycle to evaluate progress against Vision 2047 milestones. These sessions will include:

- Presentations of Mission-wise Annual Progress Reports.
- A consolidated Haryana Vision 2047 Annual Report prepared by SDGCAC, in collaboration with the DoF and HSIT.
- A Futures Brief from the DoF, highlighting emerging global trends, potential risks, and foresight-based policy recommendations for the upcoming year.

The HLTF will assess achievements, identify systemic or external challenges (such as economic shocks or climate volatility), and deliberate on course corrections. Global best practices, as well as technical input from UNDP and other advisors, will guide these strategic decisions. Annual reviews will also assess progress towards SDG 2030 and mid-term Vision 2047 indicators, ensuring global-local coherence.



Figure 6: Strategic Review Focus Areas

Quarterly Mission Reviews

Each of the six Strategic Missions will undergo quarterly performance reviews, led by the respective Mission Heads (typically ACS-ranked) and facilitated by embedded DoF Mission Coordinators. These reviews will:

- Leverage real-time data visualised through digital dashboards maintained by SDGCAC.
- Assess mission-specific KPIs, bottlenecks, and innovation pilots underway.
- Escalate unresolved issues to the HLTF or Cabinet if required.

Quarterly reviews institutionalise agile feedback loops, enabling rapid policy or project recalibration. They also serve as a platform for cross-mission convergence—ensuring actions in one domain (e.g., infrastructure) do not undermine progress in another (e.g., environment).

Public Engagement and Participatory Monitoring

Vision 2047 emphasises public involvement through transparency and participatory monitoring. Citizens can track progress via a digital **Haryana Vision 2047 Dashboard** – an online portal displaying KPIs linked to the SDGCAC's data systems. The government will promote participatory governance by utilising platforms such as annual consultations to gather feedback on local issues and online portals or apps for public suggestions and complaints, with innovative ideas potentially piloted as projects. Partnerships with universities for independent programme assessments and NGOs for social audits will enhance accountability. Regular forums with industry and entrepreneurs will foster a feedback loop on business climate improvements, while media engagement will ensure transparency by sharing progress and challenges to keep the public informed and the government accountable.

Annexure-1: Methodology

THE VISIONING 7 STEP PROCESS (METHODOLOGY)

Step 1: Alignment with National Vision – Viksit Bharat @2047

The journey began by anchoring Haryana's Vision with India's overarching national goal of becoming a "Viksit Bharat" by 2047, as articulated by the Hon'ble Prime Minister. This alignment ensured coherence between state and national aspirations, setting the tone for comprehensive, inclusive, and sustainable growth.

Key Actions

- ✦ Established Haryana's Vision 2047 within the framework of national priorities.
- ✦ Collaboration initiated between the Government of Haryana and UNDP to guide the visioning methodology.

Step 2: Identification of Thematic Framework, Formation of Working Groups and Launch of the Collaborative Website

A thematic framework was crucial to structure Haryana's future development goals. Based on an in-depth budgetary analysis and stakeholder consultations, six broad themes were selected:

- ▶ Education, Skilling, and Employment
- ▶ Health and Nutrition
- ▶ Agriculture, Allied Sectors, Food, and Environment
- ▶ Growth Enablers and Infrastructure Development
- ▶ Regional Development and Local Self-Government
- ▶ Finance and Security

To operationalize the themes, Working Groups were constituted for each thematic area and a collaborative website was designed



Key Actions

- ✦ Analysis of previous year's state budget allocations.
- ✦ Extensive stakeholder consultations to reflect diverse perspectives.
- ✦ Alignment of themes with SDGs.
- ✦ Appointment of Chairpersons (Additional Chief Secretary) and Member Secretaries for each group.
- ✦ Inclusion of representatives from relevant government departments and stakeholders.
- ✦ Ensuring interdisciplinary participation for comprehensive insights.

Step 3: Inaugural Meeting and Leadership Direction; Introductory Sessions at Working Group Level followed by Continuous Communication through Digital Platforms

A high-level inaugural meeting, chaired by the Chief Secretary of Haryana, launched the process. Dedicated introductory sessions were organised for working groups to familiarise them with the process. To maintain momentum, WhatsApp groups were created for each working group.

- ▶ Setting the vision, tone, and expectations.
- ▶ Highlighting each department's vital role in the process.
- ▶ Establishment of clear roadmaps and action plans.
- ▶ Clarified departmental roles and expectations.
- ▶ Nominated domain experts to actively engage in the process.
- ▶ Fostered early collaboration and enthusiasm among participants.
- ▶ Facilitated continuous, real-time dialogue among members.
- ▶ Shared updates, discussions, and critical documents.
- ▶ Conducted quick surveys and polled opinions.

Step 4: Information and Data Gathering - Data on 'Signals' for each Working Group and filling up of Strategic Response Framework (SRF) Form

The concept of **Signals**—early indicators of transformative events or trends—was introduced. Each department was required to submit an **SRF Form** to gather domain-specific insights.

Key Actions

- ⊕ Signals curated by UNDP focusing on technology, economy, environment, etc.
- ⊕ Participants assessed signals as either Opportunities or Risks through a structured form.
- ⊕ Fostered a foresight-driven mindset among participants.
- ⊕ Departments reflected on past milestones, challenges, and innovations.
- ⊕ Identified current trends impacting their sectors.
- ⊕ Captured sector-specific foresight for better planning.

SIGNAL

In the context of strategic foresight, a signal is an early indicator or piece of evidence that suggests a potential future change or trend. It can be anything that catches your attention and points to a larger, potentially significant impact. Signals are like early warning signs, helping to identify potential future opportunities, challenges, or disruptions.

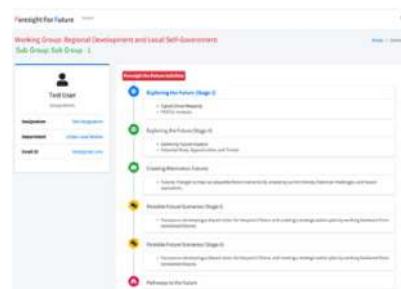
Signals can be new products, policies, events, local trends, or even a new way of doing things. For example, a sudden increase in the popularity of a specific type of product could be a signal of a larger shift in consumer behaviour.

Signals are important because they allow organisations to anticipate future changes and take proactive steps to adapt or take advantage of them. By recognising and analysing signals, organisations can improve their strategic planning and decision-making processes.

- ✘ Exploring the Future Section using the Signal Driver mapping and Prioritisation
- ✘ Assignment of specific 'signals' for detailed study.
- ✘ Use of PESTLE Analysis (Political, Economic, Social, Technological, Legal, Environmental) for driver mapping.
- ✘ Temporal analysis (past, present, future) and polarity mapping (positive/negative impacts) as well as considering the potential risks, opportunities and trends.
- ✘ Clarity through Futures Triangle on Weights of the Past; Pushes of the Present; Pulls of the Future
- ✘ Synthesis of insights from trends, disruptors, and opportunities.
- ✘ Building a robust narrative for Haryana's future directions
- ✘ Mapping of different strategic responses based on four scenario narratives (Business As Usual, Positive Disruptive Future, Negative Disruptive Future, Aspirational Future).
- ✘ Planning for resilience, adaptability, and proactive governance.

Step 5: Working Group Workshops - Using FFF Toolkit for Collaborative Work on Creation of Future Triangles and Scenario Building

Collaborative workshops were held where each of the six working group members used the Foresight for Future (FFF) Toolkit. Based on PESTLE and signal analysis, sub-groups created Future Triangles, and articulated- Four plausible Future Scenarios, to anticipate different developmental trajectories.



Step 6: Drafting Vision Statements and Strategic Pathways

Each thematic group drafted a provisional vision statement. Inputs from all workshops were compiled and analysed. Each thematic group's inputs were organised into three sections:

Where are we?

Current state analysis based on data and experiences.

Where do we want to go?

Envisioned future for 2047 aligned with aspirations.

How will we get there?

Strategic actions, pathways and roadmaps.

Key Actions

- ▶ Alignment with national goals and thematic objectives.
- ▶ Formulation of strategic pathways to achieve the vision.
- ▶ Discussions and refinements among group members for consensus.

Step 7: Compilation and Thematic Chapter Development and Finalisation of Vision 2047

After multiple iterations and consultations, the Haryana Vision 2047 Document was finalised.

Key Actions

- ✔ Use of secondary research to validate findings.
- ✔ Application of Future Triangle insights for deeper understanding.
- ✔ Integration of departmental insights and national policy frameworks.
- ✔ Integration of all thematic chapters.
- ✔ Stakeholder validation and approvals.
- ✔ Publication and dissemination.

Annexure-2

This note summarises the predictive analysis by Prof. N. K. Bishnoi, Guru Jambheshwar University of Science and Technology (GJUST), Hisar, and Ms. Gargi Boora, Assistant Professor, GJUST, Hisar (submitted to SJHIFM). The study projects GDP and sectoral performance under different scenarios, outlining Haryana's prospects of attaining developed economy status and the policy pathways required. For detailed methodology, projections, and policy implications, please refer to the full paper at the provided link- https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5607353

Viksit Haryana@2047: A Triad Framework for Inclusive and Sustainable Growth

This study examines the potential for Haryana to transition into a developed economy by the late 2030s, ahead of India's 2047 target. It defines a developed economy using a three-dimensional framework: (1) per capita income exceeding the World Bank's projected High-Income Country (HIC) threshold (USD 22,431 (approx.) by 2044-45), (2) an SDG score of 90 or higher (necessary condition for avoiding the middle-income trap), and (3) a Human Development Index (HDI) value above 0.85 (sufficient condition for high human well-being).

The paper uses three scenarios to project economic growth, with the "Achievable" scenarios suggesting Haryana can reach HIC status by 2040-41. The transition requires a decisive shift from an investment-led model to one driven by TFP, human capital development (e.g., world-class universities), regional equity, and robust governance reforms.

Methodology and Assumptions

The study employs a multi-pronged methodology for projecting the three core criteria:

1. Per Capita Income Projection : Uses the **SGAM** at the sectoral level to estimate potential GSDP growth.

This requires projecting capital (K), labour (L), and TFP.

- **Labour/Worforce:** Projected using targeted sector-wise employment growth rates and official population projections.
- **Capital Stock:** Estimated using the **Perpetual Inventory Method (PIM)**.
- **INR - USD Exchange Rate:** The **realistic scenario** from a PPP-adjusted projection is adopted, assuming an average annual depreciation of **0.83%**.
- **HIC Threshold:** Extrapolated based on the historical average annual growth rate (2.383%) of the World Bank's threshold since 1989.

2. HDI: Projected using two methods based on historical annual improvement rates (1990-2022)..

3. SDG Score: Adopted as a proxy for the Comprehensive Development Index (CDI). Projected based on the historical average annual improvement rate of **2 points**.

General Assumptions Underlying the Framework

The overarching goals and assumptions that frame the entire study are:

- **Definition of Developed Economy (Triad Framework):** Attaining the status requires meeting three benchmarks simultaneously: per capita income (USD>USD HIC threshold), SDG Score (>90), and HDI (>0.85).

- **High-Income Status is Insufficient:** Being a "high-income economy" (World Bank classification) is only one component; a **developed economy** must also exhibit broad-based socioeconomic progress, high human well-being, and resilience against the **MIT**.
- **Policy Intervention is Critical:** Achieving the "Achievable" scenarios (transitioning earlier than BAU) requires **proactive policy adoption** to promote TFP growth (minimum 2.00% across all sectors), social, and geographical inclusion.
- **Functional Income Distribution (Achievable Scenario 2):** Assumes that the functional distribution of income in Haryana **mirrors that of the national economy** due to the absence of a detailed State-level Input-Output Table.
- **HIC Threshold Equivalence:** Assumes parity between the exchange rate-based conversion of Per Capita Income and the World Bank's Atlas method for comparison against the HIC threshold.

Three Business Scenarios

Business As-Usual Scenario

- **Methodology:** This scenario extrapolates historical sectoral real growth rates from 1999-2000 to 2023-24 forward to 2046-47. It assumes a gradual decline in inflation rates from 5.0% (2024-25 to 2029-30) to 4.0% (2030-31 to 2039-40), and 3.0% (2040-41 to 2046-47).
- **Projection:** The projected average growth rate of Haryana's NSVA between 2024-25 and 2046-47 is 12.52% in nominal terms and 8.61% in real terms. Per capita income in USD is projected to grow at an average rate of 10.48% per year. Haryana is projected to achieve high-income status by 2042-43 and become a USD 1 trillion economy by 2044-45.

| Year | Total NSVA | | Per Capita NSVA | |
|---------|-------------------|----------------|-----------------|-------|
| | INR Lakh Crore | USD Billion | INR | USD |
| 2024-25 | 9.55 | 114.40 | 310560 | 3720 |
| 2025-26 | 10.79 | 128.18 | 346750 | 4119 |
| 2026-27 | 12.20 | 143.71 | 387644 | 4567 |
| 2027-28 | 13.80 | 161.20 | 433901 | 5070 |
| 2028-29 | 15.61 | 180.94 | 486018 | 5633 |
| 2029-30 | 17.68 | 203.20 | 544763 | 6262 |
| 2030-31 | 19.85 | 226.32 | 605610 | 6904 |
| 2031-32 | 22.31 | 252.20 | 673953 | 7620 |
| 2032-33 | 25.08 | 281.21 | 750771 | 8419 |
| 2033-34 | 28.21 | 313.72 | 836853 | 9307 |
| 2034-35 | 31.75 | 350.17 | 933391 | 10295 |
| 2035-36 | 35.75 | 391.06 | 1041691 | 11396 |
| 2036-37 | 40.27 | 436.94 | 1161742 | 12605 |

| Year | Total NSVA | | Per Capita NSVA | |
|---------|-------------------|----------------|-----------------|-------|
| | INR Lakh Crore | USD Billion | INR | USD |
| 2037-38 | 45.39 | 488.46 | 1296278 | 13949 |
| 2038-39 | 51.19 | 546.32 | 1447102 | 15444 |
| 2039-40 | 57.76 | 611.32 | 1616252 | 17107 |
| 2040-41 | 64.62 | 678.32 | 1790023 | 18791 |
| 2041-42 | 72.33 | 753.02 | 1983409 | 20650 |
| 2042-43 | 80.99 | 836.32 | 2198697 | 22704 |
| 2043-44 | 90.74 | 929.26 | 2438450 | 24973 |
| 2044-45 | 101.70 | 1032.98 | 2705539 | 27480 |
| 2045-46 | 114.04 | 1148.78 | 3003178 | 30253 |
| 2046-47 | 127.93 | 1278.09 | 3334969 | 33319 |

2. Achievable Scenario 1 (Estimated Elasticities)

- Methodology:** This scenario uses the SGAM. It derives output elasticities (coefficients of capital and labour) empirically from restricted least squares regression on Haryana's own sectoral data (1999-00 to 2023-24). It assumes a minimum TFP growth rate of 2.00% in every sector, with TFP and capital growth rates phased to increase by 20% in F-2 (2030-31 to 2039-40) and decline by 20% in F-3 (2040-41 to 2046-47).
- Projections:** The average NSVA growth rate for the period 2024-25 to 2046-47 is projected at 13.30% (current price) and 9.39% (constant price). Per capita income growth in USD is projected at an average annual rate of 12.25%. Haryana is projected to achieve HIC status by 2039-40 and become a USD 1 trillion economy by 2042-43.

| Year | Total NSVA | | Per Capita NSVA | |
|---------|-------------------|----------------|-----------------|------|
| | INR Lakh Crore | USD Billion | INR | USD |
| 2024-25 | 9.62 | 115.28 | 312953 | 3748 |
| 2025-26 | 10.95 | 130.13 | 352037 | 4182 |
| 2026-27 | 12.47 | 146.96 | 396414 | 4671 |
| 2027-28 | 14.21 | 166.01 | 446850 | 5221 |
| 2028-29 | 16.19 | 187.63 | 503960 | 5841 |
| 2029-30 | 18.45 | 212.11 | 568653 | 6536 |
| 2030-31 | 21.03 | 239.69 | 641406 | 7312 |

| Year | Total NSVA | | Per Capita NSVA | |
|---------|-------------------|----------------|-----------------|-------|
| | INR Lakh Crore | USD Billion | INR | USD |
| 2031-32 | 23.97 | 271.03 | 724297 | 8189 |
| 2032-33 | 27.35 | 306.70 | 818846 | 9182 |
| 2033-34 | 31.23 | 347.29 | 926455 | 10303 |
| 2034-35 | 35.68 | 393.57 | 1049071 | 11571 |
| 2035-36 | 40.80 | 446.33 | 1188904 | 13006 |
| 2036-37 | 46.69 | 506.54 | 1346793 | 14612 |
| 2037-38 | 53.47 | 575.37 | 1526879 | 16430 |
| 2038-39 | 61.29 | 654.07 | 1732491 | 18490 |
| 2039-40 | 70.31 | 744.16 | 1967499 | 20825 |
| 2040-41 | 78.33 | 822.23 | 2169795 | 22778 |
| 2041-42 | 87.33 | 909.22 | 2394890 | 24934 |
| 2042-43 | 97.45 | 1006.34 | 2645579 | 27319 |
| 2043-44 | 108.84 | 1114.64 | 2925031 | 29954 |
| 2044-45 | 121.67 | 1235.88 | 3236842 | 32878 |
| 2045-46 | 136.13 | 1371.36 | 3585101 | 36115 |
| 2046-47 | 152.46 | 1523.18 | 3974460 | 39709 |

3. Achievable Scenario 2 (Fixed Elasticities)

- **Methodology:** This scenario also uses the SGAM. It adopts fixed factor-share-based elasticities derived from Statement 7.1 of the National Accounts Statistics 2024, used as a proxy for Haryana's functional income distribution. It assumes the same TFP and capital growth rates and phased changes as Achievable Scenario 1.
- **Projections:** The average NSVA growth rate for the period 2024-25 to 2046-47 is projected at 13.87% (current price) and 9.96% (constant price). Per capita income growth in USD is projected at an average annual rate of 12.79%. Haryana is expected to attain HIC status in the year 2038-39 and the USD 1 trillion economy milestone in the year 2041-42.

| Year | Total NSVA | | Per Capita NSVA | |
|---------|-------------------|----------------|-----------------|------|
| | INR Lakh Crore | USD Billion | INR | USD |
| 2024-25 | 9.67 | 115.80 | 314377 | 3765 |
| 2025-26 | 11.06 | 131.33 | 355277 | 4220 |
| 2026-27 | 12.65 | 149.01 | 401946 | 4736 |
| 2027-28 | 14.47 | 169.13 | 455250 | 5320 |

| Year | Total NSVA | | Per Capita NSVA | |
|---------|----------------|-------------|-----------------|-------|
| | INR Lakh Crore | USD Billion | INR | USD |
| 2028-29 | 16.57 | 192.08 | 515919 | 5980 |
| 2029-30 | 18.98 | 218.21 | 584995 | 6724 |
| 2030-31 | 21.77 | 248.13 | 663990 | 7569 |
| 2031-32 | 24.97 | 282.35 | 754536 | 8531 |
| 2032-33 | 28.67 | 321.52 | 858416 | 9626 |
| 2033-34 | 32.94 | 366.36 | 977329 | 10869 |
| 2034-35 | 37.87 | 417.77 | 1113568 | 12283 |
| 2035-36 | 43.57 | 476.68 | 1269743 | 13891 |
| 2036-37 | 50.16 | 544.23 | 1447020 | 15699 |
| 2037-38 | 57.78 | 621.81 | 1650117 | 17757 |
| 2038-39 | 66.61 | 710.86 | 1882927 | 20095 |
| 2039-40 | 76.83 | 813.16 | 2149942 | 22756 |
| 2040-41 | 85.97 | 902.44 | 2381452 | 24999 |
| 2041-42 | 96.25 | 1002.10 | 2639522 | 27481 |
| 2042-43 | 107.83 | 1113.51 | 2927312 | 30228 |
| 2043-44 | 120.88 | 1237.85 | 3248367 | 33265 |
| 2044-45 | 135.57 | 1377.09 | 3606667 | 36635 |
| 2045-46 | 152.14 | 1532.62 | 4006678 | 40361 |
| 2046-47 | 170.83 | 1706.74 | 4453415 | 44494 |

In conclusion, Haryana's transition to a developed economy by the 2030s is achievable through targeted policy interventions that accelerate productivity gains, promote inclusive social development, and bridge regional disparities. Achievable Scenario 1, with its emphasis on estimated elasticities and strategic policy interventions, is considered the most realistic foundation for government planning.

| Haryana Projected Share of Sectoral NSVA in Total NSVA (% of Total NSVA) | | | | |
|--|----------------|------------------|-----------------|------------|
| Year | Primary Sector | Secondary Sector | Tertiary Sector | Total NSVA |
| 2029-30 | 15.01 | 29.68 | 55.55 | 100 |
| 2039-40 | 11.12 | 32.01 | 56.85 | 100 |
| 2046-47 | 5.67 | 35.98 | 58.36 | 100 |

Annexure-3

Abbreviations

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 1 | 3D | Three Dimensional |
| 2 | 5G | Fifth Generation |
| 3 | AAA | Anticipatory, Adaptable, and Agile |
| 4 | AAM | Ayushman Arogya Mandir |
| 5 | ABDM | Ayushman Bharat Digital Mission |
| 6 | ABHA | Ayushman Bharat Health Account |
| 7 | AB-PMJAY | Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana |
| 8 | ACS | Additional Chief Secretary, Government of Haryana |
| 9 | AFOLU | Agriculture, Forestry and Other Land-Use |
| 10 | AI | Artificial Intelligence |
| 11 | AICTE | All India Council for Technical Education |
| 12 | AIIMS | All India Institute of Medical Sciences |
| 13 | AISHE | All India Survey on Higher Education |
| 14 | AKIC | Amritsar-Kolkata Industrial Corridor |
| 15 | AMB | Anaemia Mukht Bharat |
| 16 | AMRUT Scheme | Atal Mission for Rejuvenation and Urban Transformation |
| 17 | ANM | Auxiliary Nursing Midwife |
| 18 | APIs | Application Programming Interfaces |
| 19 | ASEAN | Association of Southeast Asian Nations |
| 20 | ASER | Annual Status of Education Report |
| 21 | ASHA | Accredited Social Health Activist |
| 22 | AT&C | Aggregate Technical & Commercial |
| 23 | ATS | Applicant Tracking Systems |
| 24 | AWC | Anganwadi Centre |
| 25 | AYUSH | Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 26 | B.Ed. | Bachelor of Education |
| 27 | BANS | Bhartiya Nyaya Sanhita |
| 28 | BAU | Business as Usual |
| 29 | BBBP | Beti Bachao Beti Padhao |
| 30 | BC | Backward Class |
| 31 | BCCs | Behaviour Change Campaigns |
| 32 | BE | Budget Estimate |
| 33 | BMI | Body Mass Index |
| 34 | BPO | Business Process Outsourcing |
| 35 | CAGR | Compound Annual Growth Rate |
| 36 | CapEx | Capital Expenditure |
| 37 | CASA | Current Account/Savings Account |
| 38 | CBG | Compressed Biogas |
| 39 | CBRNE | Chemical, Biological, Radiological, Nuclear, and Explosives |
| 40 | CCC | Clean, Carbon Negative, and Conducive Environment |
| 41 | CCS | Carbon Capture and Storage |
| 42 | CCTNS | Crime and Criminal Tracking Network System |
| 43 | CCTV | Closed Circuit Television |
| 44 | CED | Centre for Entrepreneurship Development |
| 45 | CFC | Common Facility Centers |
| 46 | CFLOWS | Chennai Flood Warning System |
| 47 | CFS | Container Freight Stations |
| 48 | CGTMSE | Credit Guarantee Fund Trust for Micro, Small and Medium Enterprises |
| 49 | CGWB | Central Ground Water Board |
| 50 | CHC | Community Health Center |
| 51 | CHIRAYU | Comprehensive Health Insurance of Antyodaya Units |

| S.No | Abbreviation | Full Form |
|------|-------------------|--|
| 52 | CIF | Community Investment Fund |
| 53 | CII | Confederation of Indian Industry |
| 54 | CIP | Capital Investment Plan |
| 55 | CITS | Craftsmen Instructor Training Scheme |
| 56 | CLAP | Comprehensive Logistics Action Plan |
| 57 | CNC | Computer Numerical Control |
| 58 | CNG | Compressed Natural Gas |
| 59 | CO ₂ | Carbon Dioxide |
| 60 | CO ₂ e | Carbon Dioxide Equivalent/Emissions |
| 61 | CoE | Centre of Excellence |
| 62 | COP | Conference of the Parties |
| 63 | COPD | Chronic Obstructive Pulmonary Disease |
| 64 | COVID | Coronavirus Disease |
| 65 | CoWIN | Covid Vaccine Intelligence Network |
| 66 | CPHEEO | Central Public Health and Environmental Engineering Organisation |
| 67 | CRM | Crop Residue Management |
| 68 | CSO | Civil Society Organisation |
| 69 | CSP | Concentrating Solar Power |
| 70 | CSR | Corporate Social Responsibility |
| 71 | CSSR | Crisis-Specific Search and Rescue |
| 72 | CT | Computed Tomography |
| 73 | CwSN | Children With Special Needs |
| 74 | DALYs | Disability Adjusted Life Years |
| 75 | DAY-NRLM | Deendayal Antyodaya Yojana - National Rural Livelihoods Mission |
| 76 | DBT | Direct Benefit Transfer |
| 77 | DESA | Department of Economic and Statistical Affairs |
| 78 | DIET | District Institute of Education and Training |
| 79 | DMHP | District Mental Health Programme |
| 80 | DMIC | Delhi-Mumbai Industrial Corridor |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 81 | DNA | Deoxyribonucleic Acid |
| 82 | DoF | Department of Future |
| 83 | DOST | Department of Science and Technology |
| 84 | DPIIT | Department for Promotion of Industry and Internal Trade |
| 85 | DPR | Detailed Project Report |
| 86 | DSR | Direct Seeded Rice |
| 87 | DWS | Department of Drinking Water and Sanitation |
| 88 | ECBC | Energy Conservation Building Code |
| 89 | EEE | Equitable, Eco-Friendly, and Experimental Farming |
| 90 | EHIS | Estonian Health Information System |
| 91 | EHR | Electronic Health Record |
| 92 | EMF | Electromotive Force |
| 93 | EPR | Extended Producer Responsibility |
| 94 | ERP | Enterprise Resource Planning |
| 95 | e-Sanjeevani | National Telemedicine Service of India |
| 96 | ESDM | Electronic System Design & Manufacturing |
| 97 | ESG | Environmental, Social, and Governance |
| 98 | ESI | Employees' State Insurance |
| 99 | ESIC | Employees' State Insurance Corporation |
| 100 | ESIAN | Estrategia Integral de Atención a la Nutrición |
| 101 | EU | European Union |
| 102 | e-Upchaar | Hospital Management Information System in Haryana |
| 103 | EV | Electric Vehicle |
| 104 | EVSE | Electric Vehicle Supply Equipment |
| 105 | FCD | Foreign Cooperation Department |
| 106 | FDI | Foreign Direct Investment |
| 107 | FEF | Future-Ensured Families |
| 108 | FFF | Foresight for Future |

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 109 | FIP | International Pharmaceutical Federation |
| 110 | FPO | Farmer Producer Organisation |
| 111 | FSSAI | Food Safety and Standards Authority of India |
| 112 | FY | Financial Year |
| 113 | G20 | Group of Twenty |
| 114 | G2B | Government-to-Business |
| 115 | G2C | Government-to-Citizen |
| 116 | GAIL | Gas Authority of India Limited |
| 117 | GAN | Global Apprenticeship Network |
| 118 | GAP | Good Agricultural Practices |
| 119 | GBCI | Green Business Certification Inc |
| 120 | GBP | Green Bond Principles |
| 121 | GDP | Gross Domestic Product |
| 122 | GER | Gross Enrollment Ratio |
| 123 | GHG | Greenhouse Gases |
| 124 | GHN | Global Haryanvi Network |
| 125 | GIFT | Global Information and Market Facilitation Team |
| 126 | GIS | Geographic Information System |
| 127 | GJUST Hisar | Guru Jambheshwar University of Science and Technology, Hisar |
| 128 | GM | Green Mark |
| 129 | Gol | Government of India |
| 130 | GP | Gram Panchayat |
| 131 | GPDP | Gram Panchayat Development Plan |
| 132 | GPEDC | Global Partnership for Effective Development Co-operation |
| 133 | GRIHA | Green Rating for Integrated Habitat Assessment |
| 134 | GSDP | Gross State Domestic Product |
| 135 | GST | Goods and Services Tax |
| 136 | GSVA | Gross State Value Added |
| 137 | GW | Gigawatt |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 138 | HAFED | Haryana State Co-operative Supply and Marketing Federation Limited |
| 139 | HBPE | Haryana Bureau of Public Enterprises |
| 140 | HCS | Haryana Civil Service |
| 141 | HDI | Human Development Index |
| 142 | HEEP | Haryana Enterprises and Employment Policy |
| 143 | HGSC | Haryana Global Skill Centres |
| 144 | HHH | Healthy, Hopeful, and Happy |
| 145 | HIC | High-Income Country |
| 146 | HKRN | Haryana Kaushal Rozgar Nigam |
| 147 | HLTF | High-Level Task Force |
| 148 | HPS | Haryana Police Service |
| 149 | HR | Human Resource |
| 150 | H-RAFD | Haryana-Real Time Automated Feedback Dashboard |
| 151 | HRMS | Human Resource Management System |
| 152 | HSDM | Haryana Skill Development Mission |
| 153 | HSI | Hyperspectral Sensor Imaging |
| 154 | HSIIDC | Haryana State Industrial and Infrastructure Development Corporation |
| 155 | HSIT | Haryana State Institution for Transformation |
| 156 | HSPCB | Haryana State Pollution Control Board |
| 157 | HSRLM | Haryana State Rural Livelihoods Mission |
| 158 | HWC | Health and Wellness Centre |
| 159 | ICD | Inland Container Depot |
| 160 | ICDS | Integrated Child Development Services |
| 161 | ICMA | International Capital Market Association |
| 162 | ICT | Information and Communication Technology |
| 163 | ID | Identity Document |
| 164 | IE | Industrial Estates |
| 165 | IEC | Information, Education and Communication |
| 166 | IFCC | Institutional Finance & Credit Control |

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 167 | IFLOWS | Integrated Flood Warning System |
| 168 | IGBC | Indian Green Building Council |
| 169 | IHHL | Individual Household Latrines |
| 170 | III | Innovation, Inclusion, and International Alignment |
| 171 | IIT | Indian Institute of Technology |
| 172 | ILO | International Labour Organisation |
| 173 | IMR | Infant Mortality Rate |
| 174 | IMT | Integrated Manufacturing Townships |
| 175 | INR | Indian Rupee |
| 176 | IoT | Internet of Things |
| 177 | IPC | Indian Penal Code |
| 178 | IPPU | Industrial Processes and Product Use |
| 179 | IRB | Indian Reserve Battalion |
| 180 | IRC | Indian Roads Congress |
| 181 | IT | Information Technology |
| 182 | ITES | Information Technology Enabled Services |
| 183 | ITI | Industrial Training Institute |
| 184 | JEE | Joint Entrance Examination |
| 185 | JJM | Jal Jeevan Mission |
| 186 | KASE | Kerala Academy for Skills Excellence |
| 187 | Kg/ha | Kilogram per Hectare |
| 188 | KL | Kilo Litre |
| 189 | KMP | Kundli-Manesar-Palwal |
| 190 | KPI | Key Performance Indicator |
| 191 | KVK | Krishi Vigyan Kendra |
| 192 | KVPY | Kishore Vaigyanik Protsahan Yojana |
| 193 | kWh | Kilowatt hour |
| 194 | LEADS | Logistics Ease Across Different States |
| 195 | LEO | Low-Earth Orbit |
| 196 | LER | Land Equivalent Ratio |
| 197 | LFPR | Labour Force Participation Rate |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 198 | LGBTQIA+ | Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual, and Others |
| 199 | LHV | Lady Health Visitor |
| 200 | LIFE | Lifestyle For Environment |
| 201 | LPI | Logistics Performance Index |
| 202 | LSG | Local Self Government |
| 203 | M&E | Monitoring & Evaluation |
| 204 | MAR | Managed Aquifer Recharge |
| 205 | MAS | Mahila Arogya Samiti |
| 206 | MCA | Master of Computer Applications |
| 207 | MDM | Mid-Day Meal |
| 208 | MEDA | Mennonite Economic Development Associates |
| 209 | MeitY | Ministry of Electronics and Information Technology |
| 210 | MGNREGS | Mahatma Gandhi National Rural Employment Guarantee Scheme |
| 211 | MHA | Ministry of Home Affairs |
| 212 | MHRD | Ministry of Human Resource Development |
| 213 | MIS | Management Information System |
| 214 | MIT | Middle Income Trap |
| 215 | ML | Machine Learning |
| 216 | MLD | Megaliters per Day |
| 217 | MMICs | Modular Multi-Industry Innovation Centres |
| 218 | MMR | Maternal Mortality Ratio |
| 219 | MoAFW | Ministry of Agriculture and Farmers Welfare |
| 220 | MoEFCC | Ministry of Environment, Forest and Climate Change |
| 221 | MoH&FW | Ministry of Health and Family Welfare |
| 222 | MoFPI | Ministry of Food Processing Industries |
| 223 | MoMSME | Ministry of Micro, Small and Medium Enterprises |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 224 | MoSPI | Ministry of Statistics and Programme Implementation |
| 225 | MoU | Memorandum of Understanding |
| 226 | MPC | Monetary Policy Committee |
| 227 | MPHW(F) | Multi-Purpose Health Worker (Female) |
| 228 | MPI | Multidimensional Poverty Index |
| 229 | MRF | Material Recovery Facilities |
| 230 | MRI | Magnetic Resonance Imaging |
| 231 | MSE-CDP | Micro & Small Enterprises Cluster Development Programme |
| 232 | MSME | Micro, Small and Medium Enterprises |
| 233 | MSP | Minimum Support Price |
| 234 | Mt CO2e | Million Metric Tons of Carbon Dioxide Equivalent |
| 235 | MT | Metric Tonne |
| 236 | MT/ha | Metric Tons per Hectare |
| 237 | MU | Million Units |
| 238 | MUDRA | Micro Units Development & Refinance Agency Ltd |
| 239 | MVA | Manufacturing Value Added |
| 240 | MW | MegaWatt |
| 241 | NABL | National Accreditation Board for Testing and Calibration Laboratories |
| 242 | NASSCOM | National Association of Software and Service Companies |
| 243 | NCDs | Non-Communicable Diseases |
| 244 | NCERT | National Council of Educational Research and Training |
| 245 | NCR | National Capital Region |
| 246 | NCrF | National Credit Framework |
| 247 | NCRB | National Crime Report Bureau |
| 248 | NCF-FS | National Curriculum Framework – Foundational Stage |

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 249 | NDA | National Defence Academy |
| 250 | NEET | National Eligibility cum Entrance Test |
| 251 | NEP | National Education Policy |
| 252 | NFHS | National Family Health Survey |
| 253 | NFSM | National Food Security Mission |
| 254 | NGO | Non-Government Organisation |
| 255 | NHM | National Health Mission |
| 256 | NHS | National Health Systems |
| 257 | NIPUN | National Initiative for Proficiency in Reading with Understanding and Numeracy |
| 258 | NIROGI | New Initiative for Robust and Good Health in Haryana |
| 259 | NIRF | National Institutional Ranking Framework |
| 260 | NIST | National Institute of Standards and Technology |
| 261 | NIT | National Institute of Technology |
| 262 | NITI | National Institution for Transforming India |
| 263 | NOAH | Nationwide Operational Assessment of Hazard |
| 264 | Novo PAC | Novo Programa de Aceleração do Crescimento (Brazil) |
| 265 | NPG | Network Planning Group |
| 266 | NSDC | National Skill Development Council |
| 267 | NSQF | National Skills Qualifications Framework |
| 268 | NSS | National Service Scheme |
| 269 | NSVA | Net State Value Added |
| 270 | NTSE | National Talent Search Examination |
| 271 | NVHCP | National Viral Hepatitis Control Program |
| 272 | OBC | Other Backward Classes |
| 273 | ODF | Open Defecation Free |
| 274 | ODOP | One District One Product |
| 275 | OECD | Organisation for Economic Cooperation and Development |

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 276 | OOPE | Out of Pocket Health Expenditure |
| 277 | OPD | Out Patient Department |
| 278 | ORMF | Operational Risk Management Framework |
| 279 | OSFI | Office of the Superintendent of Financial Institutions (Canada) |
| 280 | OSR | Own Source Revenue |
| 281 | PADMA | Programme to Accelerate Development for MSME Advancement |
| 282 | PCIDS | PADMA Cluster Infrastructure Development Scheme |
| 283 | PDS | Public Distribution System |
| 284 | PESTLE | Political, Economic, Social, Technological, Legal, Environmental |
| 285 | PFMS | Public Financial Management System |
| 286 | PGIMS | Post Graduate Institute of Medical Sciences |
| 287 | PHC | Primary Health Centre |
| 288 | PHED | Public Health Engineering Department |
| 289 | PLFS | Periodic Labour Force Survey |
| 290 | PLHIV | People Living with Human Immunodeficiency Virus |
| 291 | PM2.5 | Particulate Matter of 2.5 Micrometer |
| 292 | PMAY-G | Pradhan Mantri Awaas Yojana – Gramin |
| 293 | PMBJP | Pradhan Mantri Bhartiya Janaushadhi Pariyojana |
| 294 | PMEGP | Prime Minister's Employment Guarantee Program |
| 295 | PMFBY | Pradhan Mantri Fasal Bima Yojana |
| 296 | PMGSY | Pradhan Mantri Gram Sadak Yojana |
| 297 | PMJAY | Pradhan Mantri Jan Arogya Yojana |
| 298 | PMJDY | Pradhan Mantri Jan Dhan Yojana |
| 299 | PM-KUSUM | Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan |
| 300 | PMKVY | Pradhan Mantri Kaushal Vikas Yojana |

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 301 | PMPFE | Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme |
| 302 | PMSMA | Pradhan Mantri Surakshit Matritva Abhiyan |
| 303 | PNG | Piped Natural Gas |
| 304 | POCSO | Protection of Children from Sexual Offences |
| 305 | POSHAN | Prime Minister's Overarching Scheme for Holistic Nourishment |
| 306 | PPH | Postpartum Haemorrhage |
| 307 | PPP | Purchasing Power Parity / Parivar Pehchan Patra / Public Private Partnership |
| 308 | PR | Public Relations |
| 309 | PRI | Panchayati Raj Institutions |
| 310 | PSEs | Public Sector Enterprises |
| 311 | PSU | Public Sector Undertaking |
| 312 | PTR | Pupil-Teacher Ratio |
| 313 | PV | Photovoltaic |
| 314 | PVC | Poly Vinyl Chloride |
| 315 | PW | Pregnant Women |
| 316 | PWD B&R | Public Works Department (Buildings & Roads) |
| 317 | PwD | Persons with Disability |
| 318 | PWMU | Plastic Waste Management Unit |
| 319 | R&D | Research and Development |
| 320 | RAMP | Raising & Accelerating MSME Performance |
| 321 | RBI | Reserve Bank of India |
| 322 | RCH | Reproductive and Child Health |
| 323 | RDF | Refuse-Derived Fuel |
| 324 | RF | Revolving Fund |
| 325 | RKVY | Rashtriya Krishi Vikas Yojana |
| 326 | RRR | Reimagine, Redesign, and Reinvest |
| 327 | RRTS | Regional Rapid Transit System |
| 328 | RTE | Right to Education |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 329 | RWA | Resident Welfare Association |
| 330 | SaaS | Software as a Service |
| 331 | SAP | Systems, Applications, and Processes |
| 332 | SACH | School Accreditation Haryana |
| 333 | SBCC | Strategic Bilateral Cooperation Cell |
| 334 | SBM-G | Swachh Bharat Mission - Gramin |
| 335 | SBM-U | Swachh Bharat Mission - Urban |
| 336 | SC | Scheduled Caste |
| 337 | SDG | Sustainable Development Goal |
| 338 | SDGCAC | SDG Coordination and Acceleration Centre |
| 339 | SDGCC | SDG Coordination Centre |
| 340 | SEBI | Securities and Exchange Board of India |
| 341 | SEHAT | Services e-Health Assistance and Teleconsultation |
| 342 | SEWA | Social Justice, Empowerment, Welfare of Scheduled Caste & Backward Classes, and Antyodaya |
| 343 | SEZ | Special Economic Zone |
| 344 | SGAM | Solow Growth Accounting Model |
| 345 | SGST | State Goods and Services Tax |
| 346 | SHG | Self Help Group |
| 347 | SIDBI | Small Industries Development Bank of India |
| 348 | SIP | Systematic Investment Plan |
| 349 | SJHIFM | Swarna Jayanti Haryana Institute for Fiscal Management |
| 350 | SKUAST-Jammu | Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu |
| 351 | SME | Small and Medium Enterprises |
| 352 | SOP | Standardized Operating Procedure |
| 353 | SPV | Special Purpose Vehicle |
| 354 | SRF | Strategic Response Framework |
| 355 | SSS | Safe, Secure, and Stable |
| 356 | ST | Scheduled Tribe |
| 357 | STP | Sewage Treatment Plant |

| S.No | Abbreviation | Full Form |
|------|--------------|--|
| 358 | STEM | Science, Technology, Engineering, and Mathematics |
| 359 | SURYA | Skilling, Upskilling, Reskilling of Youths and assessments |
| 360 | SVSU | Shri Vishwakarma Skill University |
| 361 | SWEEP | Solid Waste Environmental Excellence Protocol |
| 362 | SWM | Solid Waste Management |
| 363 | TB | Tuberculosis |
| 364 | TEU | Twenty-Foot Equivalent Unit |
| 365 | TFP | Total Factor Productivity |
| 366 | TIFAC | Technology Information Forecasting and Assessment Council |
| 367 | TOD | Transit-Oriented Development |
| 368 | TRAI | Telecom Regulatory Authority of India |
| 369 | TSU | Technical Support Unit |
| 370 | TTT | Technology, Trade, and Training |
| 371 | U5MR | Under-5 Mortality Rate |
| 372 | UAE | United Arab Emirates |
| 373 | UBI | Universal Basic Income |
| 374 | UDISE | Unified District Information System for Education |
| 375 | UHC | Universal Health Coverage |
| 376 | UHF | Ultra High Frequency |
| 377 | UHND | Urban Health and Nutrition Day |
| 378 | UK | United Kingdom |
| 379 | ULB | Urban Local Body |
| 380 | UMANG | Unified Mobile Application for New-age Governance |
| 381 | UNDP | United Nations Development Programme |
| 382 | UNESCO | United Nations Educational, Scientific and Cultural Organization |
| 383 | UN-HABITAT | United Nations Human Settlements Programme |
| 384 | UNICEF | United Nations International Children's Emergency Fund |

| S.No | Abbreviation | Full Form |
|------|--------------|---|
| 385 | UPHC | Urban Primary Health Centre |
| 386 | US | United States |
| 387 | USA | United States of America |
| 388 | USD | United States Dollar |
| 389 | VHF | Very High Frequency |
| 390 | VHND | Village Health and Nutrition Day |
| 391 | VHSNC | Village Health, Sanitation and Nutrition Committee |
| 392 | VITA | Haryana Dairy Development Cooperative Federation Ltd (Brand Name) |
| 393 | VUCA | Volatility, Uncertainty, Complexity, and Ambiguity |
| 394 | W@HT | Work at Home Towns |
| 395 | WASH | Water, Sanitation, and Hygiene |
| 396 | WEST | Women in Engineering, Science, and Technology |
| 397 | WHO | World Health Organisation |
| 398 | WIPO | World Intellectual Property Organization |
| 399 | WPR | Worker Population Ratio |
| 400 | WSP | Waste Stabilization Pond |
| 401 | WtE | Waste to Energy |
| 402 | YS | Year in School |

Annexure-4

Participants of the Workshop

Working Group 1: Finance and Security

Shri Anurag Rastogi, IAS, Chief Secretary, Home Department, chaired the meeting.

Shri Vikas Verma, Regional Head, North, and Shri Rishi Raj Sharma, Decentralisation Lead, SDG Haryana, from UNDP India, coordinated the session. Participants included nominated members from the following departments, namely:

Finance Department

Shri Pankaj, IAS, Special Secretary

Shri Manoj Khatri, HCS, Joint Secretary

Ms. Radhika Singh, Joint Secretary

Shri Raj Kumar, Joint Director

Shri Ajay Kumar, Deputy Secretary

Shri Sunil Saran, Senior Economic Advisor

Shri Sudhir Kumar, Research Officer, HBPE/IFCC

Home Department/Police

Shri Anurag Rastogi, IAS, Chief Secretary

Shri Mukesh Kumar, HPS, Superintendent of Police (Law and Order)

Department of Economic and Statistical Affairs (DESA)

Dr. Rajvir Bhardwaj, Director

Shri Sachin, Research Officer

Shri Vikas, Research Officer

Planning Department

Shri Manoj K. Goel, Additional Director

Training Department

Shri Narender Sharma, Superintendent

Shri Amit Kumar, Assistant

Working Group 2: Education, Skilling, and Employment

Shri Vivek Agarwal, IRS, Director, Skill Development & Industrial Training and the Member Secretary of the group chaired the workshop. Shri Vikas Verma, Regional Head, North, Shri Satinderpal Singh Chahal, M&E Lead, Shri Rishi Raj Sharma, SDG Decentralisation Lead, and Ms. Sharan Suri, Programme Associate, from UNDP India, coordinated the sessions. Participants included nominated members of the various participating departments, namely,

Swarna Jayanti Haryana Institute for Fiscal Management (SJHIFM): Shri Manoj Kumar Goel, Additional Director; Ms. Namrata Sharma, Research Assistant; Ms. Jagriti Sharma, State Programme Officer; and Ms. Anupama Sharma, Research Assistant

Skill Development and Industrial Training: Shri Sanjiv Sharma, Additional Director; Shri Muthu Kumaran, Senior Consultant, PMUHSDM; Shri Rahul Singla, Principal Consultant, PMU-HSDM; Shri Vijay Dhiman, Assistant Director; Shri Lal Chand Rewaria, Deputy Director; Shri Pardeep Dahiya, Joint Director; Shri Ashwani Kumar, Principal; Shri Gajender Kumar, Deputy Director (Technical); Shri Ajay Mohan, Joint Director; Dr. Neeru, Joint Director

Social Justice, Empowerment, Welfare of Scheduled Caste & Backward Classes, and Antyodaya (SEWA): Shri Navdeep Singh, Joint Director (Admin); Shri A.D Paswan, Principal, SIRTAR (Rohtak); Dr. Rambir Sharma, Junior Braille Teacher; Shri Jashanjit Singh, Consultant; Shri Yogesh Saini, Accounts Officer; Shri Sukhvinder Singh, Senior Accounts Officer; and Ms. Mumtaj, Statistical Assistant

Labour: Shri Surender Suhag, Deputy Director; Dr. Anuradha Lamba, Additional Labour Commissioner; and Shri Vishwapreet Singh Hooda, Deputy Labour Commissioner

Secondary Education: Dr. Kiranmayee, Addl Director (Academic); Dr. Bal Kishan Yadav, Consultant (Planning); Dr. Parmod Kumar, Programme Officer; and Shri Virender Singh, Programme Officer

Directorate of Micro, Small, & Medium Enterprises: Shri Sanjay Rohilla, Assistant Director; Shri Ramandeep Singh, Deputy Director; Shri Vishal Gulia, Scientific Engineer (A); and Dr. Deepak Gupta, Chief Scientific Engineer

Employment: Shri Sanjeev Kumar, Deputy Director; Shri Narpender Sangwan, Assistant Director

Department of Industries & Commerce: Shri Satish Kumar, Deputy Director

Elementary Education: Shri Virender Singh Godara, Assistant Director

Higher Education: Shri Ajit Singh, Deputy Director

Working Group 3: Health and Nutrition

Shri Sudhir Rajpal (IAS), Additional Chief Secretary, Health & Family Welfare Department, Govt. of Haryana; Smt. Amneet P Kumar, IAS Commissioner & Secretary, Women & Child Development and the Chairperson of the group; Dr. R.S. Poonia Director General, Health Services, Haryana and the Member Secretary of the group chaired the workshop. Shri Abhimanyu Saxena, Head, Health Systems Strengthening, UNDP India was invited as one of the speakers. Shri Vikas Verma, Regional Head, North, Shri Satinderpal Singh Chahal, M&E Lead, Shri Rishi Raj Sharma, SDG Decentralisation Lead, and Ms. Sharan Suri, Programme Associate, from UNDP India, coordinated the sessions. Participants included nominated members of the various participating departments, namely,

Swarna Jayanti Haryana Institute for Fiscal Management (SJHIFM): Ms. Gunjan Gupta, Research Assistant; Shri Manoj Kumar Goel, Additional Director; Ms. Palak Singla, Research Assistant; Ms. Shivangi Garg, Research Assistant

Sports Department: Ms. Anupreksha Rastogi, Sports Dietician; Shri Chirayu Gupta, Consultant; Ms. Laxmi Pant, Consultant; Ms. Nikita Saha, Consultant

Women and Child Development Department: Shri Pritosh Gharu, Team Leader PMU; Ms. Shalini Sharma, Nutrition Expert; Smt. Kamlesh Rana, Programme Officer - Poshan; Smt. Monica Malik, Director; Smt. Rajbala Kataria, Joint Director; Shri Ankit, M and E expert

Department of Agriculture and Farmers Welfare: Shri RS Solanki, Additional Director (Stat); Shri Pankaj Kumar, ADO

Department of Health and Family Welfare: Ms. Dolly Gambhir, State Nodal Officer IDSP; Dr Ankita Ranga, Medical Officer; Dr. Hanspreet Kang, WHO NCD Consultant; Dr. Jagdeep Singh Basur, Deputy Director; Dr. Jyoti, Dental Surgeon, O/o DGHS; Dr. Navjot Singh, Nodal Officer PM branch; Dr. Nidhi Gandhi, Consultant; Dr. Paramveer, Dental Surgeon O/o NHM, O/o DGHS; Dr. Rita Kotwal Chaudhary, Deputy Director; Dr. Sanjeev Sharma, DD SS NCD; Dr. Cherry Gupta, Joint Director; Dr. Gerish Atri, ASMO NCD, Dr. Nishikant sharma, Deputy Director; Harpreet Kaur, Assistant Director; Dr. Rakesh Saini, DD; Shri Khurshid Khan, SPM; Shri Girraj Meena, SPM; Dr. Meenakshi, DD (PNTDT); Dr. Suresh Bhonsle, DYCS; Dr. Randeep Singh Poonia, DGHS; Dr. Sharanjot Singh, MO-STC; Dr. Gulshan, SND; Shri Devender Dahiya, CE; Dr. J.S Punia, DGHS; Dr. Monika, Scientist; Dr. Ranbir Singh, District Consultant (Public Health); Dr. Rani, DGHS; Dr. Aparajita Sondh. Deputy director (SS); Dr. Manasvee Chopra Saluja, DD RB SH/RKSK; Dr. Suvir Saxena, SPO, Mental Health, De-addiction Centre; Dr Hitesh Venu, STU

UNDP: Dr. Ashish Verma, Project Officer; Ms. Shravi Gupta, Intern; Ms. Amisha, Intern

Working Group 4: Agriculture & Allied Sectors, Food And Environment

Shri Rajesh Jogpal, IAS Registrar, Cooperative Societies and the Member Secretary of the group chaired the workshop. Dr. Gautam Goswami, Technology Information Forecasting and Assessment Council (TIFAC), Govt. of India and Prof. Ramesh Chand, Member, NITI Aayog were invited as speakers and Dr. Gurdev Chand, Hydroponics Expert, SKUAST-JAMMU was invited as an External Expert.

Shri Vikas Verma, Regional Head, North, Shri Satinderpal Singh Chahal, M&E Lead, Shri Rishi Raj Sharma, SDG Decentralisation Lead, and Ms. Sharan Suri, Programme Associate, from UNDP India, coordinated the sessions. Participants included nominated members of the various participating departments, namely,

Swarna Jayanti Haryana Institute for Fiscal Management (SJHIFM): Shri Manoj Kumar Goel, Additional Director; Ms. Jagriti Sharma, State Programme Officer; Shri Sat Parkash, State Programme Officer; Dr. Salinder Malik, State Programme Officer; Ms. Muskan Singhal, Research Assistant; Ms. Gunjan Gupta, Research Assistant; Ms. Palak Singla, Research Assistant; Ms. Sadhvi Mishra, Research Assistant

Department of Agriculture and Farmers Welfare: Dr. R.S Solanki, Addl. Director (Statistics); Shri Rohtash Singh, Addl. Director (Agri); Shri Pankaj Kumar, ADO (HQ); Shri Rakesh Punn, MD; Shri Sunil Sharma, CMEO, Department of Horticulture; Shri Prem Sindhu, Joint Director Horticulture; Dr. Roshan Lal Yadav, Cane Advisor

Department of Animal Husbandry & Dairying: Dr. Sameer Bhardwaj, Veterinary Surgeon (Planning); Dr. Prem Singh, Joint Director; Dr. Rajesh Dalal, Veterinary Surgeon; Shri SS Kohli (CGM)

Department of Fisheries: Shri Jai Gopal Verma, District Fisheries Officer; Shri Shripal Rathi, Director, Fisheries

Environment, Forest, and Wildlife Department: Shri Vinod Kumar, IFS, Principal Chief Conservator of Forests; Shri Ajay Pal, DFO, Principal Chief Conservator of Forests; Shri Nipun Gupta, Environmental Engineer

Food, Civil Supplies & Consumer Affairs Department: Shri Mukul Kumar, Director; Shri Bharat Bhushan, Joint Director; Ms. Rajbeer Kaur, DFSC

Department of Cooperation: Shri Amitabh Arya, Deputy Chief Auditor; Ms. Poonam Nara, Additional RCS; Ms. Suman Balhara, Additional RCS; Ms. Kavita Dhankhar, Additional RCS (B&P); Shri Sanjiv Singh, Manager (F.S); Shri Ashok Verma GM; Shri Virender Kumar, MD, Labourfed; Shri Aman Dhiman, Nodal Officer; Shri Anuj Tyagi, GM (P&W); Shri Yogesh Sharma, Prof. and Head Joint Registrar; Shri Narender Singh, GM (PROD); Shri Monu, Assistant

UNDP: Ms. Amisha, Intern; Ms. Dimpal, Participant; Ms. Shravi Gupta, Intern; Shri Akshat Bajpai, Intern and Shri Shashank Tamaskar, Associate Professor; Shri Anupam Sobti, Assistant Professor; and Dr. Rajesh, District Extension Specialist from Academia.

Working Group 5: Growth Enablers and Infrastructure Development

Dr. Satbir Singh Kadian, Engineer-in-Chief of the Irrigation and Water Resources Department and the Member Secretary of the group chaired the workshop. Shri Vikas Verma, Regional Head, North, Shri Satinderpal Singh Chahal, M&E Lead, Shri Rishi Raj Sharma, SDG Decentralisation Lead, and Ms. Sharan Suri, Programme Associate, from UNDP India, coordinated the sessions. Participants included nominated members of the various participating departments, namely,

Swarna Jayanti Haryana Institute for Fiscal Management (SJHIFM): Shri Pankaj, IAS, Director, Shri Manoj Kumar Goel, Additional Director, Shri Sat Prakash, State Programme Officer, Ms. Palak Singla, Research Assistant, and Ms. Namrta Sharma, Research Assistant

Irrigation and Water Resources Department: Shri Mandeep, Executive Engineer, Shri Himanshu Sharma, Executive Engineer, Shri Dinesh Jain, Superintending Engineer, Shri Siddharth Sharma, Media Assistant, Shri Pardeep Sharma, Assistant, and Shri Rahul Sharma, Consultant

Department of Industries and Commerce: Shri Rajneesh Mittal, Assistant General Manager, Shri Somesh Phartiyal, Senior Consultant, and Ms. Vandana Bhagotiya, Senior Consultant

Directorate of Science and Technology: Dr. Deepak Gupta, Chief Scientific Engineer, and Shri Vishal Gulia, Scientific Engineer (A)

Energy Department: Shri C.S. Jakhar, Superintending Engineer/P&D, Shri Virender Kumar, Superintending Engineer/Planning, Shri Sanjeev Yadav, Superintending Engineer, Shri Mukesh Chauhan, Superintending Engineer (UHBVN), Shri Deepak Kumar, SDO-DHBVM, Shri Sagar, SDO O/o CE PD&C Panchkula, Shri Sanjay Mohan Duhoon, Assistant Engineer, Shri Ravinder Singh Poonia, Project Officer, and Mr Ajit Kumar, Project Officer

Citizen Resources Information Department: Shri Tilak Mehta, Director (Admin), Shri Pankaj Bansal, Senior Consultant, Shri Bhanu Pratap, Senior Consultant, and Ms. Sheetal Godara, Deputy System Executive Officer

Department of Civil Aviation: Shri Pawan Kumar Sharma, Accounts Officer, and Shri Rajesh Vats, Head Assistant Accounts

Public Works Department (B&R): Shri Sarbjit Singh Mann, Deputy Transport Controller from the Department of Transport; Shri Gaurav Jain, Executive Engineer

Directorate of Micro, Small and Medium Enterprises: Shri Ritul Singla, Assistant Director

UNDP: Shri Vishnu Sultania, Advisor.

Working Group 6: Regional Development and Local Self-Government

Dr. Yash Pal, IAS, Director, Urban Local Bodies, Haryana, and Member Secretary for the group, presided over the workshop. Participants included nominated members of the various participating departments, namely,

Urban Local Bodies: Shri Pankaj Vashishth, Project Officer; Shri Anil Kumar, AMD, SUDA; Shri Anurag Aggarwal, Project Officer, SUDA; Shri Manjeet Singh, DTP; Shri Vivek Singh, SE; Shri Rahul, ATP

UNDP: Shri Vikas Verma, UNDP Regional Head (North Region, India); Ms. Sharan Suri, Programmer Associate; Shri Rishi Raj Sharma, SDG Decentralisation Lead; Shri Satinder Singh Chahal, M&E Lead; Ms. Shravi Gupta, Intern; Ms. Amisha, Intern

Rural Development Department: Shri Shitiz Kashyap, Young Professional, SPMRM; Ms. Sheetal, RO; Shri Sakil, Programmer

SEWA: Ms. Mumtaj, Statistical Assistant; Shri Chander Mohan, CAO; Dr. Vishal, DSWO

Swarna Jayanti Haryana Institute for Fiscal Management (SJHIFM): Shri M.K. Goel, Additional Director; Ms. Sadhvi Mishra, Research Assistant; Shri Mohit Sharma, Research Assistant; Shri Sat Prakash, State Programme Officer

Public Health Engineering Department: Shri Sanket, Executive Engineer; Shri Ashish Sehgal, Executive Engineer

Development & Panchayat: Shri Darshan Singh, Consultant

Annexure-5A

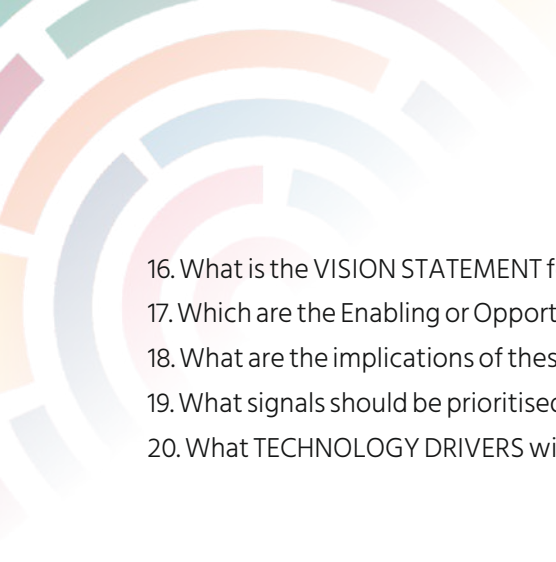
SIGNALS FORMAT

| (Name of Working Group:_____) | | | | | | |
|-------------------------------|-------------------|--------------------|-----------------------------------|---|---|---|
| S.No. | Signal Definition | Signal Description | Signal Type | Impact | Likelihood | Time Horizon |
| | | | Rate (Risk, Opportunity, Neutral) | (Rate between 1 to 5: 1- No Impact, 5-High Impactful) | (Rate between 1 to 5: 1 - Least sure of happening, 5- Highly sure it will happen) | Short Term (1-2 Years). Mid Term (3-7 Years) Long Term (7+ Years) |

Annexure-5B

STRATEGIC RESPONSE FRAMEWORK

- 1.Name
- 2.Phone Number
- 3.Email ID
- 4.Please select your Working Group
- 5.Department
6. Have you filled the Signal Form? (You can proceed to the next section - Strategic Response Framework/Department Worksheet - after filling the Signal Form)
- 7.Have you filled the Strategic Response Framework (Department Worksheet)
8. What has changed in the last 25 years? (Word limit: 500 words)
9. What were the enabling factors which helped bring the change? (Govt policy, Private Enterprises/Tech Innovation/Integrated Approach/Capacity Building/Budgetary Support/National Change/Changed Circumstances). (Word limit: 500 words)
10. What has changed in the last 25 years? (Word limit: 500 words)
11. What were the enabling factors which helped bring the change? (Govt policy, Private Enterprises/Tech Innovation/Integrated Approach/Capacity Building/Budgetary Support/National Change/Changed Circumstances). (Word limit: 500 words)
12. What has NOT changed in the last 25 years? (Word limit: 500 words)
13. What were the reasons for no change in the situation? (Word limit: 500 words)
14. What internal challenges within the state, department, or sector should be addressed to facilitate positive change? (Word limit: 500 words)
15. What is our ambition? What kind of Haryana we want to see by 2047? Articulate the overall broad VISION STATEMENT for the Haryana state. (Word limit: 50 words)

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- A decorative graphic in the top-left corner consisting of several concentric, overlapping circular segments in various colors including orange, blue, green, and pink, creating a sunburst or ripple effect.
16. What is the VISION STATEMENT for the Group to contribute to the ideal state Haryana? (Word limit: 50 words)
 17. Which are the Enabling or Opportunity signals, and which are the Disruptive signals? (Word limit: 500 words)
 18. What are the implications of these signals on development, work, and on the state. (Word limit: 500 words)
 19. What signals should be prioritised, and which ones should be closely monitored? (Word limit: 500 words)
 20. What TECHNOLOGY DRIVERS will impact our sector? (Word limit: 500 words)







GOVERNMENT OF HARYANA

**Swarna Jayanti Haryana Institute for Fiscal Management
IP-9, Sector 3, Panchkula, Haryana 134109**

